

AQUARIST & PONDKEEPER

DECEMBER 1996

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COMPETITION
WINNERS



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CHRISTMAS BAZAAR



The Better Fishkeeping Magazine

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DECEMBER 1996 VOL 61 NO 9

AQUARIST PONDKEEPER

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COVER PICTURE



The *Corydoras* catfish has become one of the most widely-kept species in the tropical freshwater aquarium, rising from its early role as lowly scavenger to a widely-appreciated genus (with numerous species) in its own right.

Photo: HP. & C. PEDNOIR

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BRIAN MIDDLETON PROVIDES LIFE SUPPORT

FREE SUPPLEMENT

Christmas Bazaar
SEE PAGE 43

Comment

"So, in due course of time, nine out of every ten aquaria were abandoned; many of the shops were given up, because there was no longer any custom; and to all appearances the aquarium fever had run its course, never again to appear, like hundreds of similar epidemics.

But there was one element of strength in the aquarium possessed by none of the others. This was the study of nature in one of her hitherto unstudied phases. Those who merely treated the aquarium as a toy soon became tired of it, and cast it away accordingly, but those who saw its real capability became more enamoured of it daily."

At first you might think the above quotation a very good description of the state of affairs in the hobby today (according to some) but in fact it was penned by J. G. Wood way back in 1868 — almost a hundred years ago!

You might well say that there's nothing new under the sun but it does go to show that there always has been variations in the level of interest. It is to be hoped that the present low level of activity will soon begin its expected upward turn.

With this issue *MJ Publications Ltd* will have completed a whole year of *A&P*, during which time the appearance has changed and the contents shaken down to a settled pattern. However, just as the gentleman above observed, things do not remain static and next year we will be introducing a slightly different approach to the subject matter in question. There is still much to be learned within the hobby which continues to offer a wide range of diverse interests regardless of one's own personal favourites: technology continues to progress making the optimum aquarium conditions all the more easy to maintain. Despite the apparent 'smallness' of the world there are still new species to be discovered and reported on within these pages.

We have found the production of *A&P* to be a challenging and stimulating task and look forward to providing you with the best fishkeeping reading matter in the months to come. We thank you for your continuing support and take this opportunity of wishing fishkeepers everywhere a Very Happy Christmas and a Successful New Year.

Jick Hills

EDITOR

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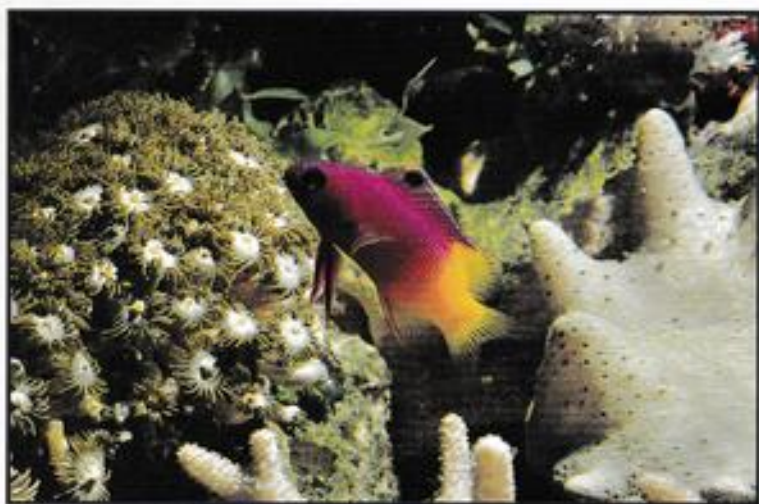
LATEST NEWS FROM THE HOBBYISTS + CHRISTMAS TETRA COMPETITION

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Festive

NICK DAKIN
LOOKS AT
MARINES
FROM A
CHRISTMAS ANGLE

PHOTOGRAPHS BY
THE AUTHOR



The Royal Gramma (*Gramma loreto*)

It's that time of year again when writers like myself are asked to highlight various marine animals with a Christmas theme.

Far from being an easy task, one soon discovers that those people who label species with a common name (whoever they may be) have an obvious aversion to the Festive Season! For the choice is extremely limited to say the very least. Nevertheless, I've entered into the Yuletide spirit and come up with a selection of species that are not only excellent aquarium subjects but possess some of the most tenuous links to Christmas that you are ever likely to find!

ONCE IN ROYAL DAVID'S CITY

THE ROYAL GRAMMA (*Gramma loreto*)

In its purple and yellow livery this is a regal fish if ever there was one. Hailing

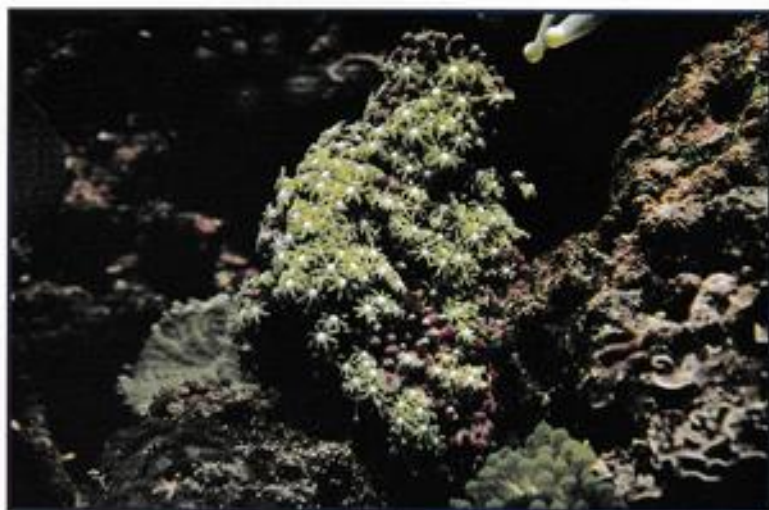
from the Caribbean the Royal Gramma is one of the most popular fish in the hobby. It is suitable for both fish-only and reef aquaria and provides a vibrant splash of colour in any situation. Rather prone to Marine Whitespot, this little fish requires the protection of an ultra-violet steriliser as well as a prophylactic copper-based medication in the absence of invertebrates. It

will not generally enjoy the company of its own, or similar, species (such as the False Gramma or Strawberry Gramma) although pairings into a small harem is possible with great care. The Royal Gramma is easily fed on marine flake, live or frozen Brine Shrimp, Mysis, and other small morsels of food. Provide plenty of shelter for this predominantly cave-dweller.

WE THREE KINGS OF ORIENT ARE ... FOLLOWING YONDER STAR

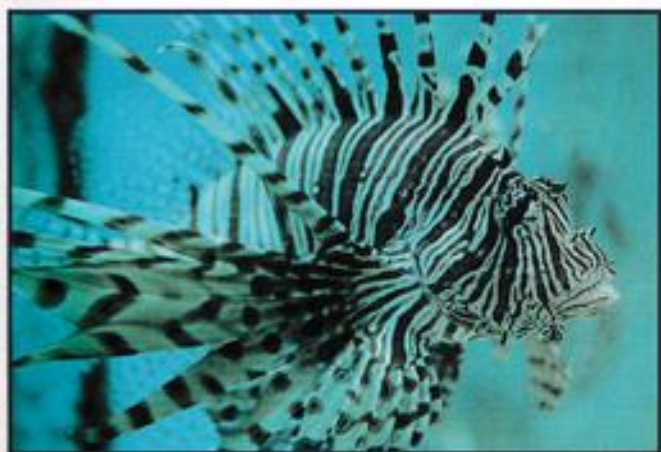
STAR POLYPS (*Clavularia* spp.)

Although it may not be immediately obvious, *Clavularia* polyps have a star-like eight-point symmetry and very often a small white



Star Polyps (*Clavularia* spp.)

Favourites



The Turkeyfish (Family: Scorpaenidae)

eye in the centre, thus giving rise to the common name of Star Polyps. A cluster of small polyps arises from a thin, rubbery-type mat which can spread quickly given optimum water and lighting conditions. Even in less than perfect conditions growth is steady and this makes it one of the most ideal invertebrates for the reef aquarium.

Colours vary from brown to silvery-grey and green, depending on the species. If fish are kept in the same tank and fed frozen foods, then Star Polyps need no extra nutrition, for they obtain all the nourishment they need from the minute particles in the water. Once established, mats of

Clavularia that have spread onto glass surfaces, or separate rocks, can be carefully detached with a

razor blade and positioned elsewhere to form a new colony. Regular water changes are essential for good growth and a consistent show.

TURKEY AND SOME MISTLETOE WILL HELP TO MAKE THE SEASON BRIGHT

THE TURKEYFISH
(Family: *Scorpaenidae*)
Better known in the United Kingdom and other parts of the world as The Lionfish, this family of fishes has so many

common names that confusion over species identification is frequently a problem, unless the scientific terms are used. Most marine

aquarists will be aware that these fish possess venomous spines capable of inflicting an extremely painful wound to the careless, or clumsy. Turkeyfish often arrive from the wild unwilling to feed, except on expensive and inconvenient live foods. However, with a little patience and persistence, meaty frozen fare such as Lancefish, Cockle and Mussel, is eventually greedily taken. Turkeyfish should be kept with other fish too large to swallow; these may include Moray Eels, large Angels, large Wrasse, Snappers and Groupers. They are usually very peaceful towards suitable tankmates and may be housed together quite safely. Aquaria should be more than large enough to accommodate the widespread fin rays of the adult *Pterois* species (eg. 6ftx15x18in), although dwarf members of this family (*Dendrochirus*) do not object to smaller quarters (eg. 36x15x18in).

HARK THE HERALD ANGEL SINGS

THE FIREBALL ANGEL
(*Centropyge acanthis*)

This endearing little fish is



The Fireball Angel (*Centropyge acanthis*)

MARINE Festive Favourites

ideal for giving added interest and colour to the reef aquarium. Hardly ever exceeding 2in (5cm) in length, it is a predominantly



ABOVE
Starfish (Class: *Astroidea*)

BELOW RIGHT
Majestic Snapper
(*Symphoricarthus spilurus*)

dark blue species with a pale orange caudal fin and an orange flash covering the face and spreading over the back. The colour of this flash can vary greatly from a rather insipid yellow to a deep, rich orange, depending on the location of capture. In the aquarium, it will tirelessly search the rocks and algae for any morsels of food without harming any invertebrates. Adult sexing is not too difficult: males are larger and have long, drawn out bodies, while females are smaller and considerably rounder in body shape. Almost any marine fare is acceptable as long as the pieces are small; live and frozen Brine Shrimp, *Mysis*, Lobster eggs and marine flake are all very popular. This is an ideal species for

beginner and experienced hobbyists alike.

OH LITTLE TOWN OF BETHLEHEM ... THE SILENT STARS GO BY

STARFISH (Class:
Astroidea)

If any creature epitomises

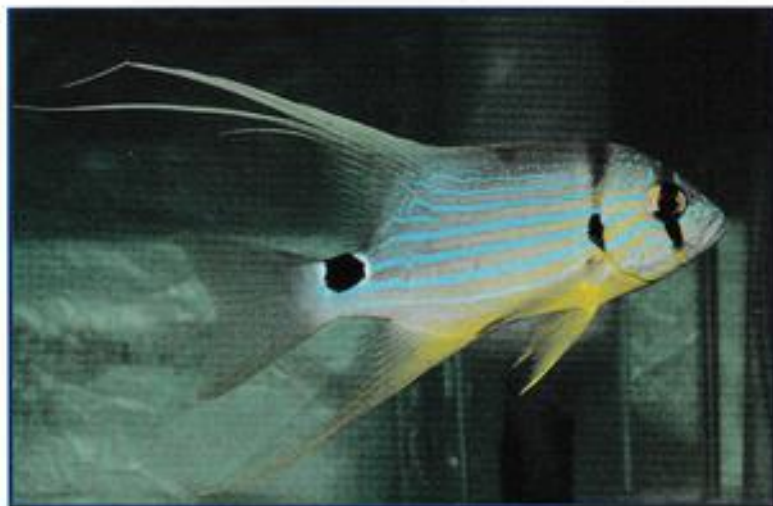
the essence of the seashore, it must surely be the Starfish. Not a fish at all, this confirmed invertebrate has a star-like symmetry that seems to be a lasting image from everyone's childhood. It is widely believed that all Starfish are herbivores and will quietly graze on algae until the cows come home! The truth is almost the opposite; most species are carnivorous hunters, feeding

on shellfish and sponges. When choosing specimens it would be wise to confirm their feeding habits in advance if valuable Clams and other molluscs are not to be lost. The maintenance of high quality water is essential, Starfish will not tolerate any slacking in this area and will quickly deteriorate if water conditions begin to slide. The range of colours available is large with blue, brown, red, orange and purple being regularly imported. Always introduce Starfish into a well-established aquarium for the best long term survival prospects.

THE MAJESTIC NATURE OF CREATION

MAJESTIC SNAPPER
(*Symphoricarthus spilurus*)

Sometimes referred to as the Long-Fin Snapper owing to grossly extended dorsal and anal fin rays this beautiful species is definitely one for the fish-only aquarium. It can attain 12in (30cm) in the wild and nearly as much in a spacious tank. Once settled, this peaceful fish can become extremely tame and should be kept with other non-



aggressive species. Feeding poses little problem as the Majestic Snapper will accept almost all marine fare: live and frozen Brine Shrimp, Mysis, River Shrimp and other meaty foods; even flake is taken by some individuals. A capacious

mouth and large appetite requires that this species be kept with fish of its own size; smaller fish all run the risk of being eaten. The Majestic Snapper exhibits a perfect display of diversionary camouflage with a representative 'eye'

marking at the caudal peduncle. Should a predator strike, the fish stands a 50/50 chance that it will damage a less sensitive part of the body, rather than the actual eye itself. Overall, a marvellous choice for the larger aquarium.

beloved of reef keepers, they can be kept singly or in small shoals and are particularly peaceful. Firefish are easily fed on most marine foods such as Brine Shrimp, Mysis, Lobster eggs and flake; however, they will only take morsels that are suspended or drifting in the current, so some circulatory pumps are best left on at feeding time.

If under serious threat from other fish Firefish will retreat into the rockwork and may not be seen for weeks or even months, maintaining their health on the few food particles that might pass their way.

All species of Firefish are particularly prone to attack from Bristleworms, crabs and lobsters during the hours of darkness, for once locked into their 'bolthole' they will not move and are generally eaten alive by these opportunist predators!



CHESTNUTS ROASTING ON AN OPEN FIRE

THE FIREFISH (*Nemateleotris magnifica*)

Firefish are one of the mainstays of the marine fishkeeping hobby. Much

The Firefish (*Nemateleotris magnifica*)

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TROPICAL

Discarded Gouramis

A PHONE CALL
TO
**STEVE
MATCHETT**
AT LONDON
ZOO'S
AQUARIUM
OFTEN MEANS
BIG TROUBLE

PHOTOGRAPHS BY THE
AUTHOR

London Zoo, the Aquarium: it's Monday morning and the first of many public enquiries start to filter through. The chap on the other end of the phone explains that he would like to do the Aquarium's collection a big favour by donating a 24in long Giant Gourami, *Ophiocoma goramyi*, known as 'George', who has outgrown his tank. The Aquarium staff member remains unimpressed and in turn explains that unfortunately there is no room for such a large fish at present however 'impressive' or 'friendly', and that we are also trying to re-house some of our own old monster fish. The dismayed man tries further persuasion by pointing out that 'George' is being offered FREE and that he can deliver the next day.

Patently the Aquarist explains again that they are sure that 'George' is a fine



Giant Gourami.

example of a giant gourami, but there still is not enough room in the Aquarium at this time nor that there will be in the near future. "Try your local aquarium shop or aquarium Club," the man is told; exasperated the man wails that he already has with no success, so what on earth should he do with the fish?

What, indeed, can he do with the fish? The choices are limited. Either the poor fish can be forced to live out its remaining days in a small, cramped tank that was once luxurious, or a new bigger

tank will be purchased for it if it is very lucky; or more commonly 'George' is reluctantly taken to the vet on a doomed one-way trip. Occasionally, an unwanted monster fish is callously dumped into a local pond or river, where if it is a temperate species it could possibly cause harm by competing, eating, or introducing alien disease organisms to our native fauna. If it is a tropical species it will quickly die in the colder water. A case in point was in 1986 when a 3ft long black catfish,

Pseudorasbora niger, was found dying on the bank of the River Thames and rushed to London Zoo where, in its extremely weakened state, it died several hours later.

Unwanted American Bullfrogs, *Rana catesbeiana*, are usually released into garden ponds where they proceed to devour the native Frogs and Newts at an alarmingly fast rate. As these American Bullfrogs can survive mild winters in the UK they could pose a serious threat to our native amphibians which are anyway under mounting pressure for survival without added complications of these huge eating machines.

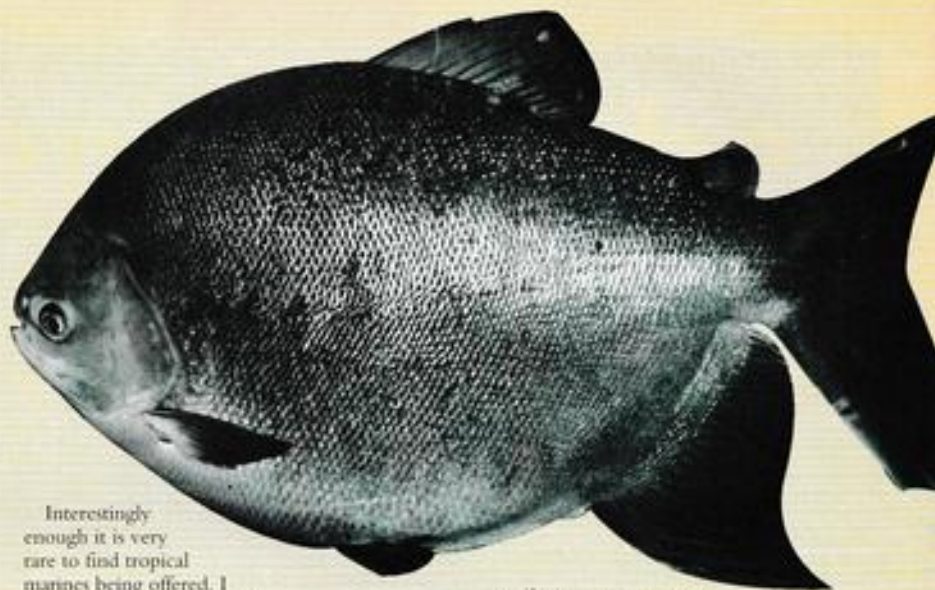
Anyhow, releasing the Bullfrogs into areas from which they can escape is illegal.

Every month, on average, London Zoo's Aquarium is offered at least four Giant Gouramis that have outgrown their tanks, several large cichlids such as Oscars, *Astronotus ocellatus*, two large catfish such as Red-tailed Catfish, *Pylaeotrypa hemioleptus*, and a few American Bullfrogs, plus

many, many other huge freshwater fish that are all now too big for their tanks or ponds. Add just these few average numbers of unwanted fish; that's 48 Giant Gouramis a year, 24 huge (often great specimens) catfish each year, 100 or so big cichlids and 50 or so Bullfrogs. Remember this is all that we know of from the desperate public that persevere with the busy telephone queuing system at London Zoo. How many aquatic retailers are offered similar numbers of large fish, not to mention the other public Aquaria that keep

freshwater fish? How on earth do the people who buy these fish expect the public aquaria and retailers to accommodate all these unwanted animals?

Who is to blame for the plight of these fish which, in the majority of cases, would be better off not being kept at all in captivity? With the abundance of information that is provided by the aquatic press there is no excuse for people to remain ignorant of the potential size that these monster fish can, and invariably will, attain. When asked why they bought the fish without reading up on its requirements first the reply from the individual trying to 'dump' the huge fish, is usually that of among the blame on the aquatic retailer as the retailer "didn't tell me it would grow so big." This is hard to believe as there are so many good aquarium shops around. More likely the catfish, etc. was an impulse buy and whatever information that the retailer offered regarding the potential growth was ignored as they thought 'how could such a cute little thing at 2in long grow that big and, anyway, everyone knows that the staff in fish shops know nothing!' Oh, and of course, the favourite fish-keeping myth — fish only grow according to the size of the tank! Try pointing that one out to your 4ft Red-tail!



Interestingly enough it is very rare to find tropical marines being offered. I suspect that with the greater costs involved in keeping marines that marine hobbyists make greater efforts to fulfil the requirements of the fish. Although the occasional 5ft long Nurse Shark, *Ginglymostoma cirratum*, can be found looking for a new home, tropical marine importers seem to take a more responsible view of their livestock's long term survival by importing very few potentially large fish such as Sharks or difficult-to-feed species. This self-policing by marine

retailers has yet to be reflected by most freshwater tropical retailers, as the Giant Gouramis, huge catfish, etc. are still, it seems, commonly available. Granted the fish are occasionally 'dumped' on the importer to make up the numbers that fall short on their orders with the fish farms abroad, but I find it hard to believe that there is such a huge demand by

hobbyists to supply large growing fish to merit many of these fish actually being requested on a retailer's order. Perhaps it is time that some of these more irresponsible or misguided aquatic dealers reviewed what stock they are actually selling and take a long term view of the fate of these potential monster fish.

The Ornamental Fish Industry (OFI UK) have recently introduced, for members, large fish



TOP OF PAGE
Colossoma.

ABOVE
Red-tailed Catfish.

**TROPICAL
Discarded
Gouramis**

Giant Gourami.



relevant fish tanks to inform the customer how big that 3in fish can possibly grow to. This

is certainly a positive step by the OFI which can only benefit its members, the customer and, ultimately, the fate of these large-growing fish.

warning labels that the retailer can stick on the

If you are a member of

the OFI and haven't already implemented this practical idea I would urge you to do so and help prevent a lot of unnecessary problems!

Trends in fishkeeping come and go, but I can't help but groan along with my colleagues when we read in the aquatic press each year that hundreds of Red-tailed Cats, etc, at 2in long have been imported that particular season. Usually it takes about two years before the expected influx of phone calls start to come in with the pleas to rehouse 'my huge, friendly, catfish, Pacu, Bullfrog, Giant Gourami, Snakehead, etc, etc!'

PLEASE NOTE:
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PRICES CORRECT AT TIME OF GOING TO PRESS

Harvesting of Koi from the field ponds in Japan generally takes place in October and November and dealers are spending time in Japan in order to select Koi that they can sell on to the hobbyist. It is in November and December that these chosen fish will start arriving in the UK and be distributed to the many outlets around the country. If you wish to get first pick then now is the time to nip off to the dealer of your choice to examine his new stock.

I guess the first thing to do on arrival is to spend some time looking at the better quality Koi that you would love to have swimming around in your pond but which are really not on the shopping list! This helps develop appreciation of these wonderful fish. Spend some more time talking to the dealer or other customers about the finer points of those high quality fish.

Move on to the tanks that contain Koi to your liking and spend as long as possible viewing them. What will you be looking for? Some of the points to be considered are listed below. It is not intended to be an exhaustive list as we each have our own view through our own eyes but they are, however, probably the most important general points that hold good for most, if not all varieties of Koi.

Body shape: It should be a full, well rounded appearance; often described as either cigar or airship shaped.

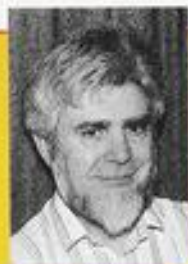
Generally the body widens just behind the gill covers and then starts to taper in towards the tail. The head shape also falls into this category; it too should be seen to be well rounded and certainly not described as 'pointed'. The most highly valued fish are generally female and they can be seen to have a long deep 'tummy'.

Skin quality: This is more difficult to define, but the easiest way to check it out, if in doubt, is to look at the fish in a basket or bowl and observe the skin when the back of the Koi comes out of the water. It really should show a lustrous shine, have a 'depth' and glisten.

Colouration: Taking the Kohaku (white fish with red pattern) as an example. Firstly the Hi (red) must be a good red (although the orangey reds are acceptable in certain circumstances) and the white must be a good white.

Secondly the Hi must be even in colouration. Sometimes you will see that it fades (or thins) in places.

Pattern: Most important is the overall effect of the pattern. Is it balanced? Is it pleasing to the eye?



DAVID TWIGG'S KOI CALENDAR

Another point to be considered here is the 'Kiwa' or edging to the pattern. A clean line on the trailing edge of the Hi pattern is much preferred; difficult to obtain on the leading edge due to overlapping white scales that can cause a 'bleeding' effect to be seen. If buying a small fish then the pattern should be 'heavy', i.e. a larger proportion of red than white.

This is because the pattern on a white based Koi never seems to grow at the same rate as the base colour.

Eyes: These are often overlooked! The most obvious to look for here is how they are seated. If by your judgement they look either too sunken or protruding then it would be wise to reconsider that choice. Compare the eyes with other Koi of similar size in the same vat for confirmation. Eyes should also be bright and shiny and show no sign of cloudiness.

Fins: In the Gosanke varieties (Kohaku, Sanke and Shows) fins are usually white at the muscle and become increasingly translucent as they extend to the edge. Often the edge is almost transparent. Other varieties can be a solid colour throughout but whatever the variety there should be no obvious colour or shape defects.

Health: Watch your chosen Koi for as long as possible and take particular note of the way it swims (not laboured or jerky motion), breathes (gill covers not opening and closing too widely or rapidly), eats and most of all how it mixes with the other fish in the pond. Other things to look for are obvious signs of damage (liable to bacterial infection), misshapen body or damaged fins, raised scales, sunken or protruding eyes, or large heads

and thin bodies.

Give the Koi of your choice a good long hard look before making the final decision. This time spent watching the Koi of your choice pays dividends because you will be more able to differentiate between rest and illness. Run your eyes along the body below the lateral line on both sides and then along the underside from mouth to tail checking for soreness or ulceration; pay particular attention to the anal vent and fin. Most dealers will be happy for that final check to be done in a polythene bag if this really is the fish you desire.

The above points are not the only things to take into consideration but will give the person selecting, beginner or otherwise, a good start. The finer points should be discussed variety by variety. So, having picked the best fish in the vat what comes next?

Temperature: Having made the decision to buy you must now consider a couple of other factors. The temperature of the water in which your chosen fish is currently housed must be compatible with your own pond temperature. It may well be that your dealer keeps his fish in heated pools so ask the temperature on the day and compare it to your own. Buying during the winter months of November through to April could mean a difference of 10 or 15 degrees Fahrenheit (5-8°C). You may prefer to ask the dealer to hold your fish until your pond temperature has caught up in the Spring.

Travel arrangements: The transportation of your new fish is very important. It is obviously a difficult time and all reasonable precautions should be taken to

ensure minimum stress. Your dealer will have placed your Koi inside two polythene bags for safety (it has been known for bags to split or be punctured by fins) and blown them up with oxygen. Polystyrene fish boxes or similar sized cardboard boxes are usually used to support the bag during the journey. Many Koi keepers have their own box ready and prepared for their Koi purchases. Keep the fish quiet by placing a lid on the box; a coat or blanket will substitute if the oxygenated bag prevents the lid being fitted to the box. To minimise the possibility of damage to the nose (commonly known as 'bag burn') during the journey home the box should be placed in line with the axle such that vehicle movement will cause the fish to 'roll' rather than 'pitch' nose to tail. When you finally get your newest acquisition home it has to be settled into its new quarters.

Quarantine: If you have quarantine facilities available then you will have prepared them before departing and, subject to temperature adjustment, your Koi can be released. It may be thought that whether you have quarantine or not you should be happy to give your fish a dip in your favourite medication as prevention against the possible introduction of parasites.

Selecting and buying Koi is a task not to be undertaken lightly. The longer we keep Koi the more appreciative we become of colouration, pattern, body shape, skin quality and health. I wish you luck in your quest for that 'perfect' (Christmas) Koi.

Tategoi Preview Weekend

News just in is that Bob Thompson of Dai-Ichi Bonsai has returned from his three week buying trip to Japan and would like to invite keen Koi keepers to pick from the superb selection of high grade Koi he has obtained there at the Tategoi Preview over the weekend 7/8 December. The selection will include Kohaku from Hasegawa, Shows from Seijiro and Shows, Sanke and Kohaku from Dainichi together with other two and three year old Tategoi from some of Niigata's top breeders. The event is being held at Canal Lodge, situated just three miles south of junction 12 of the M4 and Bob would like to point out that those without a heated pond have the option of keeping their Koi at Dai-Ichi until the warmer weather temperatures arrive.

For further details contact Dai-ichi Bonsai on 01734 713640.

Koi Meetings in December

- 4 **Leicestershire Section BKKS.** Speaker is Ann Telford of AllClear Water Purifiers. Contact Mick Reffin, 0116 2712517.
- 5 **Suffolk & North Essex Section BKKS.** Monthly meeting. Contact Mavis Carter, 01206 866011.
- 5 **North of England Koi Chapter of Zen Nippon Airinkai.** Monthly meeting. Contact John Timmis on 01226 289507.
- 8 **Scottish Section BKKS.** Afternoon meeting in Bridge of Allan. Contact Archie Dick on 01786 832073.
- 9 **Northants Section BKKS.** 'Christmas Do' in Northampton. Contact Albert Day on 01604 407361.
- 10 **Nottingham & District Section BKKS.** Christmas dinner. Contact Shirley Hind on 0115 981 0923.
- 12 **Merseyside Section BKKS.** Speaker is Denis Wordsworth. Contact Alan Findlay, 0151 284 5973.
- 18 **Crouch Valley Section**

BKKS. Xmas Fayre and Photo show. Laindon, Essex. Contact Ron Parlour, 01277 840863.

28 Northern Koi Club. Christmas Coach Trip. Contact Tony McCann on 0161 794 1958.

All Koi keepers are welcomed to the events mentioned in this calendar (an entry fee may be payable) and further details can be obtained from the contact telephone number quoted alongside the diary entry. My thanks go to all Koi club Secretaries or PROs' and others who send me their latest calendar for inclusion in this column. If your club is not mentioned and you would like it to be, please write to me via the Editor at MJ Publications Ltd, Caxton House, Wellesley Road, Ashford, Kent, TN24 8ET. Although I do my best to ensure all events are mentioned it may be that some information, which arrives a little late, misses my deadline. To minimise the chance of this occurring you may find it more convenient to fax me direct on 01926 403500. This request also applies to dealers with special events, auctions, etc. I look forward to hearing from you.

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North American Minnows

SAUCER NESTERS

The only saucer nester is *Agostia dryogaster*, the Longfin Dace of Arizona, New Mexico, and Mexico. The most widely distributed desert fish, it tolerates heat and low oxygen in pools or even damp algae where the stream has dried out.

Omnivorous and breeds year round. On soft bottoms males swirl out pits through their nuptial activity, but do not move gravel or sand in their lips, nor remain with the nests.

These 1-2in deep by 8in diameter pits have a half inch high rim around the edge, and are clustered tightly, often overlapping at their rims. When the female enters the pit one or two males move alongside and clasp while pushing her partly into the sand. Eggs are buried in the pit and walls and not guarded, hatching in a few days.

Provide a large, low aquarium with a sand bottom for a group of a dozen. Feed flakes, cooked vegetables, Bloodworms, and Brine Shrimp. Aquarium breeding not reported, but probably not

ROBERT J. GOLDSTEIN, Ph.D. CONCLUDES HIS TWO-PART OVERVIEW OF THESE 'NEW TO YOU?' FISHES

PHOTOGRAPHS BY THE AUTHOR



Nocomis biguttatus, Blackhead Chub, juvenile stage, tubercles, Peters Creek, Spartanburg County, S.C.

attempted as the fish is common and not colourful.

PIT-BUILDERS

Camptostoma, appropriately called Stonerollers, are the only pit-builders. They are large, with a protruding snout and a hard ridge on the lower jaw, the male often with breeding tubercles on the head. He digs a 4-8in circular pit just above a pool, pushing gravel with his snout and picking up pebbles and small stones with his mouth and moving them to the outside. A male may build, take over, and defend more than one pit, chasing away conspecific males, but ignoring other Minnows which parasitise these pits for spawning. Stonerollers spawn above the pit, the eggs sinking into the pebble interstices where they are prevented from washing downstream and protected from predation, but near the surface and able to get oxygen. Stonerollers prefer clear, rocky upland streams with strong flow.

COLDWATER North American Minnows – Part 2

where they graze on algae and detritus. Males may nest near other males or not depending on Stoneroller species. Females enter a pit



ABOVE
Notropis microgobius, River
Chub

BELOW
Notropis leptoxphalus, Bluehead
Chub, nuptial male with
breeding tubercles.

hybridise. Nuptial males have vertical black and white patterns which provide shadow and light camouflage in caves, nuptial tubercles on the snout and chin used to excite the females, and modified nape

scales forming a cushion-like pad (giving rise to the term Fathead) used to brush the eggs on the roof of the nest.

The common Fathead Minnow, *P. promelas*, is hatchery reared as a bait minnow. All Fatheads live in small rocky creeks and rivers, in clear water over various bottoms, but not among plants, and are omnivorous. They are prolific egg-clusterers, with 40-400 eggs per spawning, and a nest (usually the underside of a flat rock forming a cave) sometimes containing up to 5,000 eggs. The male displays as the female nears, both bend into an S-shape, and a single egg is emitted during clapping, then swatted against the cave roof by the female's tail, where it adheres. The male rubs the eggs with snout and nape, protecting them from infection and predation.

Seine wild fish, or purchase bait fish (tuffys) from bait-and-tackle shops, or the domestic orange strain of feeder fish (ruby reds) from pet stores. A bare 10-gallon aquarium with outside floss filter and inside sponge filter is suitable for one male and four females. You can use halves of 4in diameter PVC pipe as spawning caves, but flat

and are rushed by males in a frenzy. The adhesive eggs are abandoned in the gravel. Canister and trickling filtration and a large (40-gallon long) aquarium are recommended. They adapt to *Spirulina* algae-based flake foods and frozen adult *Artemia*, but often waste away in captivity. Large, difficult, and not particularly beautiful, why keep them at all? Stoneroller nests may be required to breed other cuckoo-like Minnows which only spawn in the nests of nesting Minnows or not at all.

EGG-CLUSTERERS

Eggs are clustered in a single layer on the undersurface of a cave roof and guarded by the territorial male. Three genera of Minnows are egg-clusterers, *Pimephales*, and the closely-related *Colomesu* and *Opiopsoedus*. *Pimephales* contains Fathead Minnow species, all of which



COLDWATER North American Minnows – Part 2

rocks (slate) work fine. Provide at least 16 hours light. Most spawning is in the morning. Examine the cave every day, as eggs can



ABOVE
Cyprinella venusta, Blacktail
Shiner.

BELOW
Cyprinella lutrensis, Red Shiner.

hatch in three days. Egg clusters are incubated in a gallon jar with aeration. Fry are easily raised on *Artemia* nauplii and powdered flake food.

Oxyopocodus emiliae, the Pagnose Minnow, breeds the same way. It is common in from Canada to the Gulf coast. Males display in front of their caves by flaring fins and gill covers, trying to drive the females inside. They deposit 1-5 eggs until 30 to 120 are spawned, but several females may spawn in the same nest. Handle like Fatheads. Eggs hatch in 3-6 days, and fry require rotifers, ciliates, Ceriodaphnia, small copepods, ostracods, Vinegar-eels, or Microworms, later graduating to *Artemia* nauplii.

Codoma ornata, the Ornate Minnow, doesn't occur in the US but might be gotten in trade from a Mexican aquarist.

It is an egg-clusterer like the previous species.

CREVICE SPAWNERS

North American crevice spawners are *Cyprinella* and *Hesperoleucas*. Crevice spawners seek tight locations into which they insert eggs, the crevices protecting them from siltation, washing away down-current and, to some extent, predation.

Crevice spawning is more advanced than broadcasting but less than nesting. Crevice spawners neither

construct nor defend nests, utilizing whatever cracks are available.

Cyprinella contains 24 US and nine Mexican (with some overlap) species with silvery flank scales higher than wide and a dark mark on the chin; there are barbels on the chin in three species. Nuptial males have breeding tubercles on the snout and top of the head, white tips on the unpaired fins and rich suffusions of red, orange, yellow, blue, or green on the body and sometimes the fins; they produce sounds during nuptial activity. *Cyprinella* can be found over pebbles and rocks in runs, riffles, pools, and sometimes lakes. They spawn several times during the warm months (fractional spawning) rather than all at once. In aquaria they spawn year round on spawning mops, over marbles on a bare bottom, or in the cracks among piled stones.

An excellent substratum is the pleated filter cartridge used in Magnum canister filters for diatomaceous earth filtration.

Automobile air filters are no good because the metal screens are toxic and the pleats too close together. *Cyprinella* require live food to bring them into breeding condition.

Cyprinella analostana, the



COLDWATER North American Minnows – Part 2

Satinfin Shiner, ranges the Atlantic slope from Lake Ontario drainages southward into South Carolina, on gravelly runs and riffles of creeks and rivers, sometimes in lakes. Schools forage in current close to the bottom on small insects and crustaceans. Keep them in groups in 10-gallon or larger aquaria. Maintain on flakes, but condition for spawning with live Blackworms and frozen adult Brine Shrimp. They will breed continuously on a pleated aquarium filter cartridge, the adhesive eggs deposited just inside the crevices. Adults should be removed if the fish spawn on stacked rocks or among plants. If mops are used, pick the yellow to colourless eggs with your fingers for incubation in shallow dishes with a drop of acriflavine. If a filter cartridge is used, remove it to a gallon jar with strong aeration and acriflavine. The elongate, glasslike fry appear in 3-4 days at 68°F and rest on the bottom the first several days. They need rotifers, protozoa, green water, or infusoria for 2-3 weeks, with *Artemia* nauplii or Vinegar-eels offered in the second week. Growth is slow even on live baby Brine Shrimp, but accelerates after 1in when they start feeding on live *Daphnia*. They will take powdered flake food at a half inch, but whole flakes should be deferred until they are 1in long.

The male *Cyprinella lutrensis*, the Red Shiner, ranges from Minnesota to the Gulf coast in creeks and small rivers over sand, rock, and gravel, in runs and pools. It spawns in rock and log crevices, at the base of plants, among algal masses, and elsewhere. This plasticity in spawning sites,



ABOVE *Cyprinella pythomelas*, Fireblack Shiner.

BELOW Magnum filter cartridge with *Cyprinella* eggs in crevices.

catholic feeding habits, tolerance of turbid to clear, fast or slow, warm to cold waters, and wide use as a baitfish accounts for its wide distribution and threat to other native fishes.

Thirty years ago they were popularised in the US as 'African Fire Barbs'. They have been spawned in aquaria in Java Moss, among stones piled to provide crevices, in spawning pots,



and in the pleats of canister filter cartridges. A 10-gallon aquarium is sufficient for six fish.

Spawning readily with canister filter cartridges, eggs hatch in a week and the fry on the bottom and won't swim for a few days. After hatching pour the fry into a 5-gallon aquarium with aeration and feed green water, rotifers, infusoria, ciliates, Liquifry, or APR. After two weeks they take *Artemia nauplii*.

One of my favourites is *Cyprinella pythomelas*, the Fireblack Shiner. Provide

pleated canister filter cartridges in a large tank. Feed heavily. Spawning begins after two weeks. Eggs are deposited within the pleats and the fry, large for *Cyprinella*, hatch in 10 days and swim immediately. Feed Vinegar-eels for 1-2 days in the gallon jar, then pour the contents and cartridge into a 10-gallon or larger aquarium with a sponge filter, and begin feeding *Artemia nauplii*.

Another possible crevice spawner is *Hesperoleius symmetricus*, the California Roach. Both sexes develop orange red blotches on the chin, gill cover, and base of the anal fin. Search for it in small tributaries, warm alkaline streams, in streams polluted by sewage, and hot coastal streams. Omnivorous on algae, detritus, crustaceans, aquatic insect larvae, and even baby Lampreys. Spawns in flowing, shallow, rock bottom areas, laying adhesive eggs in rock crevices or even among plants.

GRAVEL-MOUND BUILDERS

Thick lips and highly modified, distinctly lobed, lower jaws with bony plates

COLDWATER North American Minnows – Part 2

identify the two species of *Exoglossum*. The male piles up stones, pebbles, or gravel near a bank or sunken log in an area of gentle current. The rocks or pebbles are the same size, some stolen from other Minnow mounds, the finished nest sometimes topped with snail shells. The flat-topped mounds can be 6in high and 18in wide. They spawn into the current, male and female clasping close to the gravel, the yellow eggs drifting back into the mound where they are covered by the male with more gravel. The young hatch and leave the gravel in a few days, but remain at the mound a few days before dispersing. Cutlips Minnows collected during the breeding season have spawned in a 6ft trough with 3in of pea gravel and strong current.

A shallow, half-filled 125-gallon aquarium with 3in of pea-gravel or pebbles should induce nesting. Use trickling filtration to maintain good

water quality and at least a 1,000gph powerhead for current. The parents should be removed after spawning and the filter turned off, or the eggs removed to a separate aquarium for rearing.

The River Chubs of the genus are large, big-headed Minnows with dark-edged scales and prominent breeding tubercles on the head of the nuptial male. They all have a barbel at the angle of the jaws, eight dorsal fin rays, seven anal fin rays, and a dorsal fin origin slightly ahead of the pelvic fin origin. The larger, territorial males construct a pit and fill it with carefully selected pebbles or gravel to create a mound. A spawning pit or trough (sometimes more than one) is

constructed atop the mound, and after the spawning clap and release of eggs into this high pit, the eggs are covered with a mound of gravel.

This mound-building behaviour is important because other Minnows use *Neonnis* nests as spawning sites, a few species requiring those nests for their own survival. A 55-gallon plus aquarium is required for a male and two females.

Two inches of pea gravel and river stones should be topped with closely-spaced, large, flat rocks, leaving a clearing where the male might construct a pit and mound. Use canister or trickling filtration, and power heads for current. Feed frozen Brine Shrimp and Bloodworms

supplemented with chopped earthworms.

Neonnis have not yet been spawned by aquarists, but a large aquarium (125 gallons) might yield success. The Horny-head Chub, *Neonnis biguttatus*, is typical of the genus. It occurs in clear, gravel streams and small rivers. Its diet is half plant and half insects. Spawns when temperatures reach 65°F. The male builds a nest of stones and pebbles in shallow water below a riffle, and the mound eventually reaches upward until the nest is 0.5-1.5ft below the surface.

Stones often as large as the male's head are carried in the jaws or pushed with the powerful blunt snout. The height of the nest is determined by the number of spawnings. Later spawnings result in layers of eggs placed on an ever higher mound. Many other Minnows swarm and spawn on the Chub nest.

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Growing Tips

BY
BARRY R JAMES

With the onset of the colder months the aquarist's mind tends to concentrate more on indoor activities.

The aquarium, which has taken a back seat in competition with outdoor activities, returns to re-interest the aquarist. The approach of Christmas (and the possibility of an increase in visitors) is also a spur towards tidying the tank up and restocking. The plants in particular will need looking at. Perennials such as *Cryptocoryne* and many floating plants may well have spread alarmingly and will need to be thinned out or pruned back. Others, particularly the bunch plants, may have reached the end of their growth cycle and need replacing. The gravel too may have accumulated a deep layer of mulm and it will be necessary to use a gravel cleaner over the top 1/2 in or so.

Attention should be paid to the quality of the water. All those top-ups to replace water lost by evaporation may well have led to a build up of salts such as nitrates and phosphates and an increase of break-down products such as phenols. A comprehensive analysis should be carried out to test these parameters especially if you use hard tapwater to replace evaporation. Water changes with rainwater or artificially-softened water may prove necessary. The level of fertilisers — especially trace elements — should be brought up to the optimum level.

Attention should also be paid to the lighting. The lighting intensity and quality of both fluorescent and Mercury Vapour lamps deteriorate with age and these should be replaced well in advance of their actual failure.

If you are tired of the old arrangement in your aquarium now is the time to change it. A plan of the planting scheme

should be drawn up and any new hardware items such as rocks and bogwood should be installed before the plants themselves are considered. Make a list of the types and quantities of individual species you would like before you set out to buy.

On my journeys round the shops I continue to be disappointed by the quality and variety of plants on offer. When you find a good supplier stick to him like glue, they are deserving of your support. With regards to the merits of buying plants in pots, or loose, there are certain considerations you should bear in mind.

Potted specimens originating from Continental and British nurserymen are often very good value especially for such species as *Cryptocoryne* or *Echinodorus*. On the other hand, many plants imported from the Far East in pots are often over-priced and have not been rooted properly before dispatch; this being especially true in the case of bunch plants. Avoid highly coloured and 'stiff' specimens as these are either very difficult to grow under artificial lighting or are 'house-plants' masquerading as aquatics.

With regards to plants in pots, many aquarists do not realise how easy it is to 'Pot their own'.

Potting kits are freely available from many outlets. The mesh pots come complete with rockwool and fertiliser tablets. The small 1 in pots are best for bunch plants and are a much kinder way of treating them than the use of lead wire which often damages the tissue if wound around the stems too tightly. Full instructions come with these kits and the fertiliser tablets included give a good start to growth. The larger kits containing 2 in diameter pots are best for specimen and perennial species.

CRYPTOCORYNE

The *Cryptocoryne retrospiralis* group are quite distinct from other members of the genus. They are found throughout the Indo-Chinese region and in the Philippines. They have long narrow leaves and contain the largest species. *C. usteriana* can reach a metre in height.



CRYPTOCORYNE RETROSPIRALIS (Roxb) Kunth 1831

Description: This herbaceous plant grows mainly submerged. The long, slender leaves are olive-green on both surfaces and with short petioles. The lamina may reach 50cm long but normally much smaller in cultivation.

Distribution: India and Indo-China.

Cultivation and Propagation: Best planted towards the rear of the aquarium in groups of three to five specimens. Temperature should be between 20-28°C and with an acid to neutral pH. Lighting moderate. This is an undemanding species as are most members of the group and may be increased by separating slips from the parent plant or from runners which are freely produced.

CRYPTOCORYNE BALANSAE (Gagnep) 1941

Description: At one time adult plants were freely imported from the wild. Nowadays smaller, nursery-reared specimens are imported from Far East nurserymen. *C. balansae* reaches a height of 45cm. The strap-like foliage is a bright shining-green with a wavy edge and highly bullated surface. Sometimes in bright light the plant takes on a reddish hue. The long petioles vary from brown through pale-green.

Cultivation and Propagation: This plant needs deep aquaria at least 60cm in depth to look at its best. It is seemingly indifferent to water conditions but needs a temperature in excess of 20°C. Appreciates a laterite clay substrate and good lighting. When established it can produce runners but is normally propagated by division. This plant appreciates gentle water movement as in the wild it is found in slow-running streams.

CRYPTOCORYNE USTERIANA (Merrill) 1919
Formerly known as *C. aponogetifolia*

Description: Very similar to *C. balansae* but larger in all its parts, the plant being 20cm taller than that species.

Cultivation and Propagation: Best used as a specimen plant in very deep aquaria. Appreciates a temperature in excess of 22°C, and needs good lighting and a rich substratum containing both laterite and a humus supplement. This species is best increased by separating slips from the parent plant.

A to Z of plants

By

BARRY
JAMES

Out & About

BRITISH AQUARISTS FESTIVAL 1996

One of the year's most established aquatic events is the British

Aquarists Festival, organised by the Federation of Northern Aquarium Societies, which has been held for over 20 years at Manchester every autumn.

Having lost its traditional site a few years ago at Belle Vue in the east of the City, passing only momentarily at the G-Mex Exhibition Centre, it now resides at Bowdler in Trafford Park, an area also renowned for staging other worthy events such as Manchester United's football and Lancashire's county cricket.

The 1996 event was a combination of Trade Stands and Society Tableaux with the added attraction of Lectures and the Champion of Champions Fish Competition (sponsored by AQP). The latter competition had a new look for this year, as the midwater side of the hobby was given its own separate event, with Best in Show Coldwater Fishes from previously-held Society



Bradford's winning Tableau.

PHOTO: AQP LIBRARY

Open Shows qualifying for the title.

Following on from the Qualifying Heats held at Societies' Shows, the Final of the Aquarian Aquachamp

Competition was won by Alan Stevens from Eastleigh A.S.

However, fishkeeping is not just about keeping fish in captivity; the whys and

wherefores of getting them there in the first place has given rise to much concern of late. With this in mind the organisers not only devised a Habitat Class Competition but also invited members of FAITAG to present a series of mini-lectures at the Festival to show people just what is being done to protect, and preserve, natural stocks of potential aquarium fishes for the future. Mike Crumpler, Justin Bell (Chester Zoo), Colin Grist (Bristol Zoo), Heather Hall (London Zoo) and Ian Hughes (Dudley Zoo) were all on hand with practical experiences, backed up by well-known aquarists Dr Peter Burgess and Ivan Dibble who gave useful information about captive breeding and species conservation.

On the trade side, visitors to the event could take away all manner of equipment and almost any fish from a Guppy to a Discus; there was also a wealth of information to be gathered from the many advisory services and Specialist Societies and from that greatest source of all — talking to other fishkeepers.

BRITISH
AQUARISTS
FESTIVAL 1996

MAJOR WINNERS

Champion of Champions (Tropical) — *Xiphophorus birchmanni* 87.2 points — D. MacAllister, Welland Valley A.S. 2nd 85.4 points — I. and Y. Cank, Halton A.S. 3rd 85.1 points — S. and T. Derrick, Halton A.S.

Champion of Champions (Coldwater) — Blue Shubunkin 84.5 pts — I. and J. Rees, Northern Goldfish & P.S. 2nd 81.5 points — A. Ratcliffe, N.G.P.S. 3rd 79 points — G. Cowan, Solway A.S.

Best Fish in Show — M. Agnew and S. Marshall, British Killifish Association

Best Coldwater Fish — 83 points — A. and D. White, Alden A.S.

Best Exhibit — I. Rowbottom, Silktown A.S.

Highest Pointed Breeders Team — Rob and Karen Kirkup, Rainbow A.S.

Highest Pointed Society Furnished Aquarium — 88 points — Darwen A.S.

Highest Pointed Individual Furnished Aquarium — 97 points — I. Haworth, Darwen A.S.

RIGHT The Aqua Champ finalists at the BAF. Left to right: Anthony Fisher of Bradford A.S., David Hook of WYMAG, Steve Jones of YAF, Paul Rose of Tyne Tees and Dee Weaver of Halifax A.S. Standing is the winner Alan Stevens of Eastleigh A.S. receiving the Aqua Champ Winner's Bowl from Dr David Ford of Aquarim.

PHOTO: DAVID FORD



ABOVE Champion of Champions (Tropical): *Xiphophorus birchmanni*, owned by Dave MacAllister, Welland Valley A.S.

BELOW Champion of Champions (Coldwater): Blue Shubunkin, owned by I. and J. Rees, N.G.P.S.

PHOTO: AAF LIBRARY



Highest Pointed Furnished Aquascape — 97 points — Mr and Mrs B. Wabli, Darwen A.S.

Highest Pointed Novelty Aquascape — 74 points — Miss Andrews, Belle Vue A.S.

Best Pair of Fish — 86.5 points — Mr and Mrs P. Jones, CAST 88

Society Tableaux — 1st Bradford A.S.; 2nd Darwen A.S.; 3rd Alden A.S.; 4th CAST 88; 5th Isle of Wight A.S.

Habitat Class — 1st Darwen A.S.; 2nd Mr and Mrs B. Drake.

Breeders Award Scheme: Master Breeder Diploma — D. Thornley, Tameside A.S.

Show League: 1st Halton A.S. 706 points; 2nd Tameside A.S. 516; 3rd Silktown A.S. 264; 4th St Helens A.S. 234; 5th CAST 88 186.

Junior Show League: 1st K. Lenders, St Helens A.S. 55 points; 2nd A. Cank, Halton A.S. 53; 3rd B. Case, Halton A.S. 19.

Young Artist of the Year: Sapphire & Opal Class, Holy Trinity VCP Darwen (5-7 group): Danielle Tysall, Warren Wood Primary (8-11 group).

Handicrafts — J. Lawn, Silktown A.S.

Aquarian Aquachamp 1996 — Alan Stevens, Eastleigh A.S.

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The Majolica Fish Teapot from Minton.

faithful reproduction of the original (produced in the late 1860s) and can probably be described as 'grotesque' — an elaborate decorative style rather than a faithfully-reproduced naturalistic representation. Today, the original is rarely seen on the antique market, making the current reproduction (which is limited to 2,500) even more desirable to today's collector. It is priced at £175. Stockists information available from 01782 292292.

For further information contact: Amanda Johnson, Pelicans Public Relations, 181 Kensington High Street, London W8 6SH. Tel: 0171 937 3585. Fax: 0171 937 7373. Or Valerie Baynton, Royal Doulton, Minton House, London Road, Stoke on Trent ST4 7QD. Tel: 01782 292292. Fax: 01782 292389.

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A simplified system, for extra pure filtration of marine aquariums, has been developed by QuArt Products. At the heart of the system, called the 'Marine Chemical Filtration System', there is an advanced protein skimmer, called Oxidifilter. This multi-functional filter/reactor works as a protein skimmer, an ozone reactor, a sterilising unit and a biological filter. This makes the system, with an ozoniser, a water pump and an air pump, the only equipment needed to manage, incredibly well, a marine tank.



The Marine Oxidifilters from QuArt (left to right): Oxidifilter 1, Oxidifilter 2, Oxidifilter 3 (hang-on and in sump).

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Any reader wanting further information should write to: QuArt Products, 114 Edith Road, London W14 9AP. Tel: 0171 371 3965.

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Aquaspan can provide a new swimming experience for your fish whether they are in the outdoor pond or indoor aquarium. The rectangular-sectioned bridge-like 'tube', mad from high-quality, UV stabilised

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Details from: Aquaspan Ltd, PO Box 2798, Bournemouth, Dorset BH9 1XP. Tel: 01202 531612. Fax: 01202 534110.

Test kits, treatment & food

It is now appreciated by many aquarists that amongst the

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Suitable for freshwater aquaria, ponds and marine aquaria, the test procedure uses three reagents which are added to a test sample and then after five minutes the colour compared to that of the diagnostic chart supplied. Brief notes in the instructions give guidance for remedial action depending on results.

The levels of strontium and other trace elements in the marine aquarium need to be of optimum levels for the development of invertebrate life, especially corals. The Sera Mineral Test Marine Kit measures such levels and indicates the strength (or even absence by colours ranging from colourless (no trace elements), through yellow, pink and red to brown (too many trace elements).

Needless to say in the most likely event of there being too little trace elements you will have Sera Mariniv-plus to rectify the matter.

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Details of all Sera products from: Sera, c/o John Allan Aquariums Ltd, Eastern Way Industrial Estate, Bury St Edmunds, Suffolk IP32 7AB. Tel: 01284 755051. Fax: 01284 750960.



The Aquaspan bridge-like 'tube'.

Christmas is the season of 'Goodwill to all Men' but I'd like to think that the sentiment is (or already has been) extended to your fish in your garden pond. If you have been conscientious about pond maintenance throughout the year then you can relax in the warmth of your home (and the Christmas spirit) safe in the knowledge that, barring earthquakes, power cuts or volcanic eruptions, your fish should see the winter through and be waiting to greet you next Spring.

So, what will be going on in the pond at this time of year? Hopefully, not very much. The fishes' metabolism will have slowed right down to a gentle tickover as temperatures dropped which means that as their energy expenditure is low they won't be feeding and, sorry to be so indelicate at this Festive Season, they won't be producing anything like the amount of waste they do in high summer. The darkness (perhaps due to accumulations of snow on the pond) does little to stimulate activity and if you have provided shelter, in the form of large plastic pipes or 'caves' from slabs of stone at the bottom of the pond, then that's where you'll find the fish lying up in the relative warmer water of the lowest levels. It may be prudent to clear much of the snow off the pond just so you can keep a check on the thickness of the ice and how much of the pond it is covering: do keep an area of the pond clear and maybe even think about lowering the level of the water a little to create an 'above water level' layer of ventilating air.

There are several ways of keeping an area of the water free of ice — try a floating object such as a football, a large lump of polystyrene; an inverted bell-shaped 'igloo' (again made from

Pond Diary

DECEMBER 1996

Sun	1	8	15	22	29
Mon	2	9	16	23	30
Tue	3	10	17	24	31
Wed	4	11	18	25	
Thu	5	12	19	26	
Fri	6	13	20	27	
Sat	7	14	21	28	

Susan Stephenson
winds up the year
of the
garden pond

polystyrene) can be anchored in position to maintain a collection of warm air over the water surface; bubble-wrapping the pond surface is another feasible way; aquatic manufacturers have long since produced the floating pond heater and recently there is a floating impeller system from Oase that is made to circulate the surface levels of the water to assist aeration (see *Buy Lines*, October).

If you belong to the school of thought that subscribes to the theory that running water never freezes, then perhaps you

decided to leave your filtration system ticking over through the winter. If you have turned it off (and removed the pump to the warm garage for the winter) keep an eye on the filter box too as any expansion of water left standing in it may well crack the walls of the box; remember, too, that once Spring does return any 'switched off' filters will take some time to get established again. Here it can help to use some of the filter maturation accelerators so that any toxins can be removed by your filter as soon as possible before the fish

(who will be in a weakened state after their winter 'sleep') can succumb to their adverse effects.

There is a distinct possibility that you won't have given up pond fish watching altogether. Those of you with Fancy Goldfish of the more exotic nature, such as the long-finned varieties, will have brought them indoors for the winter anyway; maybe you will have had a spawning this summer with the result that several hundred young need to be overwintered indoors in large aquariums. In either case, these fishes will be demanding your attention in the coming months so you certainly won't need to brush up your fishkeeping routines come next Spring.

Of course, the pondkeeper's mind is never inactive for long — even if there's no practical work to be done. Now is the time to be planning ahead for next year — so where are you going to put all those growing-on fry? Does your pond deserve an upgrade, perhaps with a new water feature or an adjacent bog garden area? It is a great opportunity to send away to those large water gardens for their brochures on water plants (or perhaps pond ornaments and fountains) and spend some time browsing through their tantalising pages. Just in time for Christmas there are some new books on the scene which you might be able to cajole someone to buy for you and then you can spend all the time you want curled up in your favourite armchair yet being pondside in spirit if not in person.

**BEST WISHES FOR
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SUCCESSFUL YEAR
WITH YOUR PONDS!**

COMPETITION WINNERS

Congratulations to all the winners of our recent competitions and better luck next time to the losers. Prizes will be arriving shortly direct from the sponsors.

HOZELOCK WINNERS

Mr E. D. Adamson, East Boldon, Tyne & Wear; S. Balley, Norwich, Norfolk; S. V. Bradley, Islington, London N1; Mr N. P. Duggan, Watford, Herts; Mrs E. Gillette, Manchester; Emma Hollingbery, Cardigan, Pembrokeshire; E. J. Lannsdow, Leicester; Kenneth Marshall, Glasgow; Mr P. Mirfin, Sheffield; T. Williams, Cwmbran, Gwent.

BRISTOL ZOO WINNERS

Neal Barton, Cardiff; Karen Crane, Crewe, Cheshire; Martin Daniels, Chatham, Kent; Emma Hollingbery, Cardigan, Pembrokeshire; Mr M. Perry, Orpington, Kent.

SHARK WEEK WINNERS

1st Prize Winners: Kirsty Montgomerie, Belfast, Northern Ireland; Colin McNeill, Edinburgh.
Five runners up: J. Rigby, St Helens, Lancs; Joshua Mallard, Poole, Dorset; Martin Daniels, Chatham, Kent; J. Thorn, Tonteg, Pontypridd; N. P. Duggan, Watford, Herts.

KOI Q&A

Q I have noticed that two or three of my small Koi have a secretion of a woolly type of fungus surrounding them. Very quickly, this woolly material becomes dirty and muddy when the fish lie on the bottom of the pond. I have already lost two fish displaying these symptoms.

Please can you advise me as to the cause and possible cure for this problem?

A The 'woolly appearance' form of fungus appearing on your fish sounds rather like Cotton Cover or Cottonwool Disease. The causative fungi belong to genera *Saprolegnia* and *Achlya*.

This problem usually occurs in overcrowded and unhealthy water conditions, and rarely appears in ponds displaying an appreciable degree of water movement/turnover. It occurs frequently between late autumn and early winter, though it often peaks in early spring when water temperatures range from 50°F (10°C) to 60°F (15.5°C). It can



PHOTO: GORDON WIGENS

attack all sizes of fish and not just small necrotic (dead) skin tissue exists and rarely develops on healthy tissue.

I would suggest you remove any decaying debris in the pond/filter. Create some form of turbulence/aeration in the water at ALL times. Treat the pond with an already-prepared stock solution of malachite green at 1ml/17.6 gal or alternatively, potassium permanganate at 1.5

grams/220 gal. This will help alleviate the problem, although in stubborn cases, salt bath dips (cooking salt) of 2oz/gal for individuals, for durations of up to 10 to 30 minutes may be the only recourse.

Observe any fish in short-term dips at all times, supplying aeration while in the treatment tank.

Heavily infected fish usually cannot be saved from these outbreaks, so it is advisable to prevent this situation developing, rather than attempting to cure it once it has arisen.

QUESTIONS FOR THE KOI Q&A SHOULD BE ADDRESSED TO: DAVID TWIGG,
c/o MJ PUBLICATIONS LIMITED, CAXTON HOUSE, WELLESLEY ROAD, ASHFORD, KENT TN24 8ET

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BACK TO BASICS

NEON & CARDINAL TETRAS

IGGY TAVARES LOOKS AT TWO CHARACINS THAT WOULD
BRIGHTEN UP ANY AQUARIUM AT CHRISTMAS

PHOTOGRAPHS BY THE AUTHOR TAKEN WITH A PENTAX Z-20 CAMERA



The Neon Tetra and the Cardinal Tetra may be common place but they are so

colourful that they are definitely exotic.

These two Tetras, which belong to the Characin family, have been popular since they were first

discovered; in fact what I would define as 'back to basics' fish, since they have been in the hobby a long time. They are usually found in every fish outlet and are

sold by the million worldwide. Early on they were difficult to breed and most of the Cardinals and Neons were taken from the wild. Fortunately, now with

TROPICAL Neon & Cardinal Tetras

the right water conditions and the right feeding of the tiny fry, a good percentage of these Tetras on the market are fish farm bred.



ABOVE Neon Tetra.

Paracheirodon innesi (Myers), the Neon Tetra, grows to about 1.5in. The neon has a bright neon blue-green stripe extending from the eye to the tiny adipose fin base, and a bright red area from the belly rearward to the caudal base.

Paracheirodon axelrodi (Schultz), the Cardinal Tetra, can grow a little

BELOW Cardinal Tetra.

bigger to about 2in. The Cardinal also has a brilliant blue-green stripe but the bright red area extends along the whole of the lower part of the body except for the

white belly. Both Tetras come from the Amazon, the neon from the Peruvian area and the cardinal from the Rio Negro.

Other small fishes with 'neon' in their name are the **Black Neon Tetra** (*Hyphessobrycon herbertaxelrodi*) and the **White Cloud Mountain Minnow** (*Tanichthys albanubes*), sometimes called

the Poor Man's Neon.

AQUARIUM MAINTENANCE

Neons and Cardinals are shoaling fish and should be kept in groups of at least six to ten or more to keep them

happy and to get the most of their beauty. They can form part of a community set-up consisting of other small Tetras (Black Neon Tetra, Glowlight Tetra), and perhaps a pair of the small cichlids, *Laetacara curvipops*, or another dwarf *Apistogramma* cichlid species. Angelfish and other larger cichlids should not be housed in the same aquarium.

Many new hobbyists do not realise that Angelfish are cichlids. Years ago I lost half a dozen Neons to a pair of medium-sized Angels in one night after the lights had been turned off! The tank can be decorated to suit your taste, but a well-planted tank is an added attraction. South American Tetras do best in soft water but are happy enough in moderately hard water kept at around 26°C. Filtration can be either under-gravel or external canister, but partial water changes should still be carried out every three weeks or so. Neons and Cardinals will happily take flake food and any other small foods.

BREEDING

Neon and Cardinal Tetras cannot cross-fertilise each

AQUARIUM CARE

Aquarium size:

36x15x15in
(90x38x38cm)

**Aquarium
decoration:** Well-
planted aquarium

Temperature: 26-
28°C

Water: Soft and acid
(below 10°DH, pH
below 7 if possible)

Diet: Flake, some live
or frozen food



others' eggs. However, spawning either fish requires similar conditions, although the Cardinal is supposed to be more difficult. For breeding, soft water (rain water) is required since eggs do not usually hatch in hard water. Male and female fish are separated and fed heavily until the female is heavy with roe which will be easily apparent as her sides and lower belly will be bulging. The male will look thin in comparison.

A small tank of soft water with light aeration, containing an abundance of fine-leaved plants or better still many nylon wool spawning mops placed in the bottom of the tank, is prepared. The male and female are placed in the tank in the evening and usually spawn the next morning. The spawning ritual consists of lots of chasing. Male and female come together occasionally in the spawning media and with sides pressed together give a brief tremble and the female releases a few eggs which are fertilised by the male. Spawning lasts about an hour, resulting in over 100 eggs from a mature female, after which it is important to remove the fish since they are avid egg eaters.

It is now important to cover the tank up so that the eggs remain in the dark, since they are light-sensitive. Eggs hatch in about a day depending on water temperature, but it is best to keep the tank dark for a

further three days until the fry are free swimming. At this stage a small mature sponge filter is required in the tank.

The next difficulty comes with feeding the tiny fry. A week before the spawning a crushed lettuce leaf should be placed in a pint of water on a sunny window sill. Within a week this culture should be reasonably clear and with hardly any smell. It will be teeming with microscopic life which can be poured in small amounts into the fry tank. As the fry grow within a week they will be able to take powdered flake and newly-hatched Brine Shrimp, both of which should be fed in small amounts, but frequently. With good feeding and constant clean water, the Tetras should reach 0.25in in four weeks, when the neon blue streak should start to show.

CONCLUSIONS

Neons and Cardinals are one of the most popular freshwater tropical fish and with good reason. When they first appeared in the hobby they fetched a very high price. Fortunately today, with the knowledge of their breeding requirements, they are produced on farms in huge numbers and now only cost around £1. A large shoal of Neons or Cardinals in an aquarium is a spectacular sight.

NEON & CARDINAL FACT FILE

Scientific Name: *Paracheirodon innesi*
 Common Name: Neon Tetra
 Scientific Name: *Paracheirodon axelrodi*
 Common Name: Cardinal Tetra
 Distribution: Amazon basin, South America
 Size: Neon Tetra, male and female 1.5in (3.8cm)
 Cardinal Tetra, male and female 2in (5cm) TL



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Dear Sir,

With regard to the letter by Ann Telford (November A&F), I would not argue with anyone so obviously well-read as the writer on the subject of water purifiers and RO units. I can only go on experience and results; in my experience since installing a metalex MMB0 in one of my fish houses a number of years ago thousands of Discus have passed through without a single recorded fatality due to poor water quality and, in respect to RO units, my P35 Aquatic from the same Company accepts water from my mains supply at 13GH, 5KH, 480mS TDS and reduces this to 0GH, 0KH, 20mS TDS.

Very often, in my opinion, a few facts say a lot more than a lot of bluster.

**Tony Sault,
Quality European Discus**

Dear Sir,

What an admirable and informative letter from Mr Burriluck (November A&F). It complements the work

published in other fishkeeping magazines by others on the subject and no fishkeeper need now be in any doubt about the operation and inherent problems of such redox material.

Surely, however, the essence of the case is that any manufacturer promoting the use of a system containing such material for fishkeeping should at least give his potential clientele 'informed choice' by telling them that it contains a bi-metallic media. It is also questionable whether the word 'Purifier' is an accurate and apposite description of a system that operates in this fashion.

What a different kind of

offering from Ann Telford. It would be unfair to say that she does not make some valid points but they are somewhat outweighed by inconsistencies. Let me take just a few examples.

She writes:

1. 'It is important not to add any of these metals to the amounts already present in tapwater.' Yet in a letter to this magazine in March 1995 we find her stating '... it is important to state that there is no evidence to indicate that our purification systems reduce "essential" minerals: in fact, we do have evidence to the contrary'. So, does this not imply that her own AllClear purifiers also 'add' minerals (metals?) To the water?

2. At her paragraph (2) she writes 'RO Water could well contain metals at too high a level for fish safety'. Yet in January 1996 she wrote, in *Practical Fishkeeping* magazine: 'RO water can be difficult. ... in fact water that is too "clean" can kill fish!'

So, is it to be water that is too 'clean' or water that is dangerously 'dirty'? In the latter case all the evidence would seem to contradict this statement. Given that the reliable RO membranes in use in the UK for fishkeeping generally remove in excess of 95% of 'metals' that are considered harmful to aquatic species it follows that, for Mrs Telford's argument to hold water, there would have to be amounts of Iron, Lead, Aluminium and Manganese (to name but a few) present in the tapwater concerned at levels well in excess of that which is legally permissible for HUMAN consumption and Copper and Zinc at values which, in my 28 years of work with water purification, I have never found in flowing water. Her argument should also be viewed in the

light of a statement made by her in that same article that '... water companies do not collect from polluted sources.'

3. The writer goes on to regale us with a litany of criteria for 'American Domestic Water Purifying Cartridges'.

Having worked extensively with the Americans I can say that in the US they are very conservative and highly responsible in the specifications for their drinking water products. But they only publish removal of 'metals' that they consider relevant to their immediate market. In this context it has to be said that any laboratory results, from whatever source, can only prove that in one set of circumstances a certain set of results was achieved and whilst they are one indicator of the performance of a product they should never be used or taken as 'The Gospel according to...'. There is, for instance, a well-known professional Discus breeder in the Midlands using exactly the kind of 'domestic' cartridges for 'metals' removal that Mrs Telford so abhors to great effect in notoriously 'difficult' water and is he to be castigated by her for suggesting that others use them?

4. 'How do you identify "American Domestic Metals Cartridges"?' she asks. Apparently they come in a variety of end-cap colours including 'Pale Blue'.

WRONG, MRS TELFORD. There is NO 'Pale Blue'-capped 'American Domestic "Metals" Cartridge' of the type you mention available in the UK. In fishkeeping, however, there is a pale blue-capped cartridge specially and exclusively made for Purity on Tap and developed over many years both for and with aquatic species. It is called the 'METALEX'. We have taken advantage of advanced manufacturing processes available to us to have it produced in the most effective form possible. Let me leave you, Mrs Telford, in no doubt about that.

When does 'information' become propaganda? Well, I couldn't possibly comment.

**Charles Harriss,
Purity on Tap**



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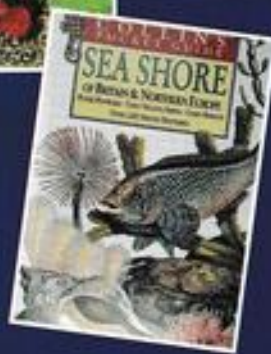
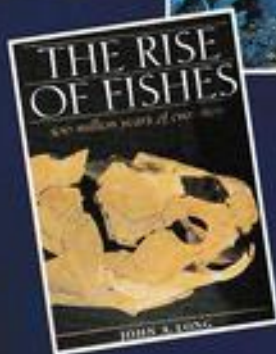
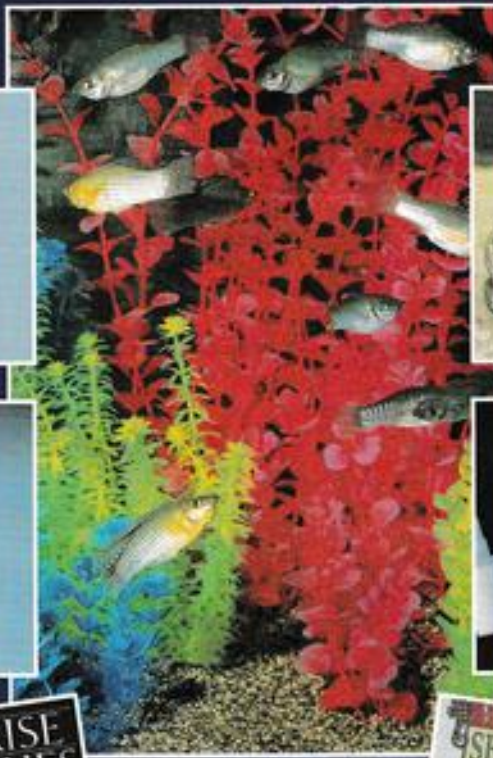
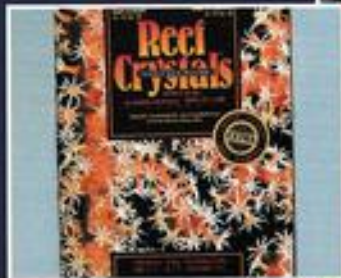
- Suitable for all types of tropical fish
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AQUATICS LIMITED

Christmas Bazaar



An **AQUARIST & PONDKEEPER** Publication

Supplement

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This
month's
Supplement
is more or

less a Lucky Dip. Unlike
the rest of the year's
Supplements its
contents are a veritable
mixture of almost
anything — the only
thing they will have in
common is that they
are all connected with
Fishkeeping in one way
or another!

Traditionally,
Christmas is the time
for giving and receiving,
and we hope you won't
leave your fish,
aquarium or pond out
of the celebrations.
Treat your pets to

*If you want an aquarium,
indoors or out, that will
be a real talking point,
this is the answer.*

*It has been converted
from a telephone kiosk by
Essex businessman Willy
White, who bought up
hundreds of the red boxes
when British Telecom
began phasing them out*

Christmas Bazaar



something
useful or
maybe give
yourself a
present allied to your
favourite interest.

There are plenty of
examples to choose
from within these
pages, from whatever
viewpoint you may
choose.

It's also a time for
amusement, and we
have some amusing
'fish tales' to tell which
should bring a smile or
two.

One of the most
useful items may well
be the complete index
to the 1996 copies of
A&P!

in the Eighties.

*Now he sells them for
bizarre uses like showers,
toilets, bookcases,
saunas, greenhouses, bird
cages and drinks
cabinets. An American
customer even wanted
one to use as a coffin!*

Words and Photos: BRIAN DEVIS

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*Christmas
Bazaar*

Marine MEGA Buys

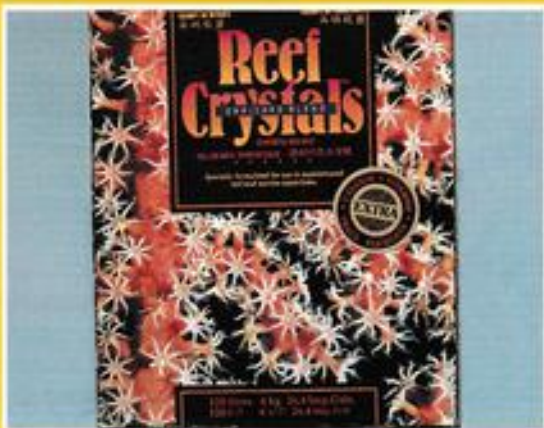
WHAT EVERY MARINE AQUARIUM COULD WANT —
AS SUGGESTED BY **NICK DAKIN**

PHOTOGRAPHS BY THE AUTHOR

MARINE SALT

All marine aquarists will (or should) perform water changes on a regular basis. Bags or boxes of marine salt can be found in a wide range of sizes. A calcium-enriched variety is particularly useful for the invertebrate keeper.

Guide prices: Reef Crystals 2kg £9.75, 4kg £17.25, 8kg £32.25



Buying gifts at Christmas can be difficult. The problem is finding something that the recipient really wants. Not so for the marine aquarist, for there is a huge range of gifts and prices to suit all pockets. Freshwater aquarists may find the

following ten suggestions rather familiar, having thumbed through the pages of *Aquarist & Pondkeeper*, but, having said that, loved ones who are without a clue as to what to buy their favourite mariner could just find some invaluable suggestions in the following ...

ULTRA-VIOLET STERILISER

A very useful addition to any marine aquarium that houses fish. Staving off diseases is an important part of marine fishkeeping husbandry and a good UV steriliser will kill all those free-swimming organisms. Make sure it is a model specifically designed for the saltwater aquarium and not for pond use. Rather expensive but well worth the money.

Guide price: Vecton 15 watt Marine Ultra-Violet Steriliser £112.80



MARINE FLAKE FOOD

A quality flake food is an ideal method of providing fish with a balanced diet of minerals and vitamins. Not all marine fish will eat flake, so a little advance homework might be necessary.

Guide prices: Aquarian Marine Flake 25g £3.07, 200g £17.92

BRISTLEWORM TRAP

Invertebrate tanks, in particular, can quickly become overrun with destructive Bristleworms and the problem has always been how to capture them without breaking the whole display down. Trap 'Em really works.

Guide price: Trap 'Em £12.75



AIRSTONES

There can be very few marine tanks that do not incorporate an air diffuser somewhere in the system (protein skimmer, uplifts, etc). All of them will need renewing at some point. So, the trick is to find out which one is required! A cheap and very useful gift.

Guide prices: Wooden Air Diffuser £1.06, Longlife Air Diffuser £1.96

Christmas Bazaar



MATURATION FLUID

Is your loved one thinking of setting up a new marine aquarium? Then they are certain to require the services of a bottle of maturation fluid. Inexpensive but invaluable.

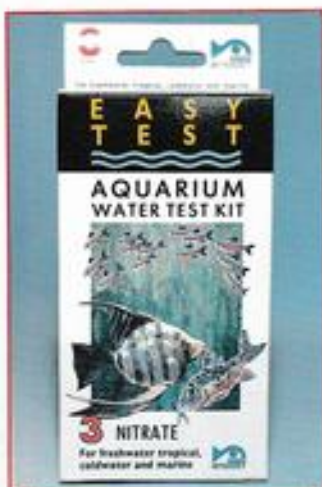
Guide price: Sea Mature £3.53



WATER CHANGE MIXING BUCKET & TAPWATER FILTER

Of course these two items could be purchased separately, depending on which one is most desirable. As many plastics can leach harmful toxins into saltwater, a 'safe' mixing bucket is essential. The types used by winemakers are ideal. In addition, a Nitragon will remove nitrates, phosphates and sulphates from tapwater. It can be recharged over 1,000 times with ordinary dishwasher salt. Very useful and great VFM.

Prices: 5 Gallon Bucket £5.75
10 Gallon £14.03. Nitragon: £56.15



NITRATE TEST KIT

All marine organisms are susceptible to nitrate poisoning to some degree and a nitrate test kit is essential to monitor levels regularly. Choose a kit that measures total NO_3^- and has an indefinite shelf life.

Guide price: £7.96



BARNACLE CLUSTER

Cheap, cheerful and ideal decoration for almost any marine aquarium. Happily, they are environmentally acceptable, being largely removed from the hulls of large boats and other underwater installations, as a regular part of maintenance. Small fish love to shelter in these miniature caves.

Guide prices (depending on size): £3.50-£9.95

SURGE CONTROLLER

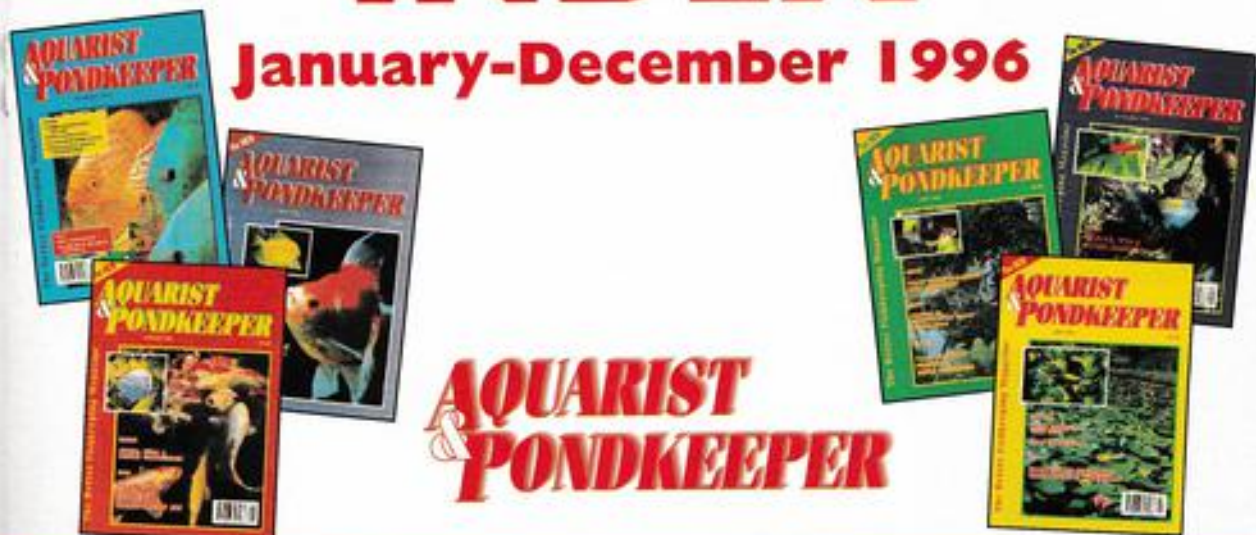
If more than one pump is used in the tank for water circulation (ie, those not essential for powering biological filtration systems), then a Wavemaker can alternate them automatically. Variations in water circulation patterns have proved beneficial to invertebrates and fish alike.

Price: £86.00



ANNUAL INDEX

January-December 1996



AQUARIST PONDKEEPER

AQUALAND

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48" x 18" x 22" Complete	£780	£390	£65	0%!!!
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72" x 24" x 30" Complete	£1,480	£720	£120	0%!!!

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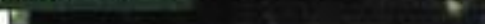
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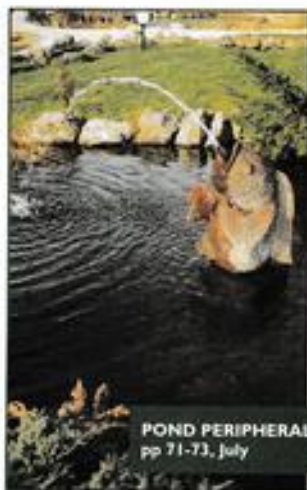
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SELECTING KOI,
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As a business man and the father of four children I have, for my entire working life, looked

forward to Christmas with some trepidation. In the early days we had a couple of florist's shops and the hassle and stress of early morning markets buying stock and organising deliveries reduced my wife and I to shambles by the time Christmas morning dawned. One Christmas Eve we settled down around a midnight looking toward to a relaxing drink only to realise at midnight that we had forgotten to buy any food or drink! It became a little better once we had given up floristry and embarked on a career in aquatics.

However my worst memory of Christmas is of pre-Christmas week in 1985. A customer who lived about 50 miles away rang to enquire whether I could supply a pump and filter for her pool. She wanted it fitted immediately whilst her husband was away on business so that when he returned for the holiday it would be a surprise present. I agreed to do the job and recruited a local jobbing builder to give me a hand. This gentleman was frankly a walking disaster as a builder but was cheap and available. It was a cold, frosty morning when we arrived at the house. The lady greeted us warmly and led the way to the end of the garden where the pond was situated. It was a large pond constructed on two levels in concrete. It was surrounded by a tall wire fence. The reason for this was to contain about 20 very fat ducks. The stench from the pond was diabolical! Under about 1/2in of water lay a solid mass of fetid duck excrement.

The lady explained that the pool was quite a problem and hadn't been cleaned out for some years. My first instinct was to turn around, get back in the car, and abandon the job. However, my assistant would need paying, and I had already incurred some expense in just getting there so I decided to press on. The lady of the house then announced she would be away from the house and would not be back until late afternoon. However, I got her to point out the location of the nearest power point and the outside tap connection before she left.

The first job was to confine the birds in their duck house. They objected violently seeing no good reason to be shut up in broad daylight. It took half an hour to accomplish this task and involved a lot of frustration, flying feathers - and a hell of a lot of noise. At this point we became aware that we were being observed by a tall, tweedy person with a deer-stalker hat and a

clipped moustache. He introduced himself as the lady's gardener, and pre-fixed his name with the title of 'Major'. He was obviously miffed because he had not been informed of our visit. He was in the process of planning out our day for us when I pointed out that I was working for the lady of the house and that it wasn't any of his damned business. He turned sofly on his heel and returned to the house next door where he lived, muttering such epithets as "Infernal cheek!" and "Blasted impudence."

I decided that the first job was to clean out the pool, but first I had to find somewhere to dump the contents. The house was on septic tank drainage and it was not on to overload the system with 500 gallons of concentrated duck fertilizer. There was absolutely nowhere in the garden where it wouldn't cause a problem so I explored further afield.

Over the hedge was a small spinney which formed part of the grounds of a church. It had been a dry month and the bare ground was covered in large deep cracks. I experimented by throwing one bucketful over the hedge and satisfactorily it disappeared down the cracks without trace. So we carried on carrying two buckets at a time and hurling it over where it continues to disappear obligingly. By this time my assistant began to moan as the water was freezing, the smell appalling and the physical effort back-breaking. "Why do I always seem to get these stuffing jobs?" he cried. I resisted the impulse to tell him that he wasn't fit for anything else, rather like the boy who stood on the burning deck! We took a break at this point as it was approaching lunchtime. There was a small pub in the village but by this time the odour had penetrated our clothes and we stunk like polecats so there was no way we could inflict our

Christmas Bazaar

A Christmas Tale

BARRY JAMES REMEMBERS A TIME WHEN IT LAY DEEP AND CRISP AND ... SMELLY

misery on others.

My customer returned early soon after lunch and came down to assess our progress. She sniffed the air, apologised, and commiserated with us. At this point we were joined by the Major who had obviously been peering out of his window awaiting her return. "Where did you put the rubbish," he asked rhetorically, having been watching our every move from an upstairs window. I explained our difficulty and the reasons for the choice of dumping ground.

The Major delighted in his triumph at exposing us as reckless incompetents, and the lady had to demur to his logic.

Soil having to dispose of about another 100 gallons of the stuff I asked the lady for guidance. She couldn't think of a solution and was gratified when I suggested putting it under a thick conifer hedge which bordered the garden. I pulled up the lower branches of the hedge to illustrate my idea but was confronted by masses of old plastic bags, bottles and general junk. The lady was appalled. "Major," she exclaimed "Are you responsible for this!" The Major turned bright-red and mumbled

something about the dustbins being too small to accommodate it. Giving me a look which indicated that if I had been in the trenches I would have been the first man to go over the top, he slunk off. The job didn't get any better.

After cleaning the pond came the job of installing the filter. The only place to put it where it wouldn't be intrusive was in a large rock garden which ran alongside the pool. It was a large 50 gallon model so the idea was to cut into the rock garden and then to disguise it with a Cotswold stone dry wall. The first attempt by my partner to hack into the soil with a pick axe was met with a sharp cry of pain. After investigation we discovered that there was only a very thin covering of soil on the rock garden and underneath was solid rock. My customer explained that when the house was built a ready-mix lorry had arrived late on the site and emptied his load on that spot. The builders promised to remove it but never did so her husband had put a thin covering of soil over it and disguised it as a rock garden. By this time it was getting dark as we were approaching the shortest day of the year so we abandoned the work for the day.

We returned the following day and finished the job. The last task was to connect up the pump. I then discovered that the power line to the bottom of the garden had a break in it. This meant digging up the lawn. Eventually we discovered the cause. Somebody had severed the cable with a spade. After carrying out the necessary repair the job was completed and all in all I was quite satisfied with the result.

In due course I put in the bill adding the extra day to the sum previously quoted - for problems outside our control. The woman paid the bill after two months having deducted 15 per cent for what she called 'Cash discount!'

Oh yes, I remember that Christmas very well!

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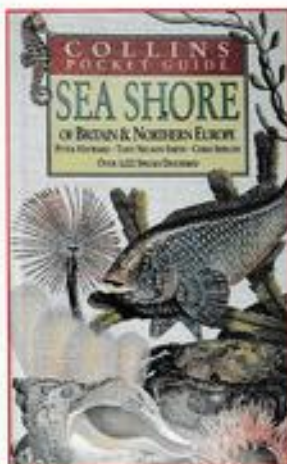
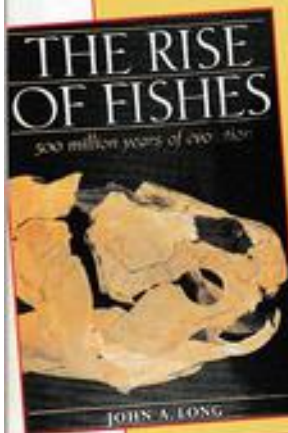
BOOK OF THE YEAR

The Rise of Fishes

Author: **John A. Long**
Publisher: The John Hopkins University Press, Baltimore, USA, 1995
ISBN: 0-80818-4992-6
Distributors: Plymbridge

I had no hesitation in nominating this book as the "Book of the Year". For anybody with any scientific interest in fishes must have pondered how they evolved. This book charts their 500 years evolution in a well written text

accompanied by excellent colour illustrations and photographs. It can be regarded as a definitive text. One word of warning is that although the text is clear, the subject is complicated and some people may find it a difficult read.



Collins Pocket Guide to the Seashore of Britain & Northern Europe

Authors: **Peter Hayward et al.**

Collins Guide to the Seashore and it immediately establishes itself as the leading pocket identification guide to the seashore and shallow seas around Britain and including the fauna of the Mediterranean Sea. Over 3,000 species are described, and contain excellent colour illustrations of all species which makes it the first general book that it should be possible to be reasonably certain of making a correct identification. Good value for money and recommended even if you already possess more comprehensive guides (see last year's list).

Saltwater Life of Great Britain & Europe

Author: **Leslie Jackman**
Publisher: Junior Nature Guides, Dragon's World

Christmas BOOK & CD REVIEWS

Andy Horton picks his Top Ten from recently published books and CD ROMS (1994-96)

Photographs by the author

Illustrations:
The Wildlife Art Agency
Publisher: **Harper Collins, 1996**
ISBN: 0 0021 9955 6
Price: **£12.99 and Special Offers**

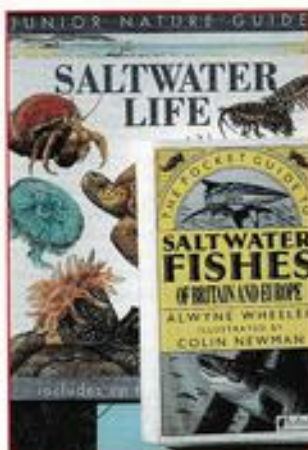
This is a completely rewritten version of the

Children's Books, 1995
ISBN: 1-85028-295-1
Price: **£7.95**

This is the best guide for the younger reader I have seen, although there are some close contenders. The arrangement on the page is modern and appealing to the eye. The illustrations are very good. Most of the common species are included, but there is nothing about the tides. This book is endorsed by Wildlife Watch, the junior branch of the Wildlife Trusts.

Philips Atlas of the Oceans

Edited by: **John Pernetta**
Publisher: **Reed International Books, 1994**
ISBN: 0-540-06275-8



Price: **£14.99 and Special Offers**

More than a conventional atlas of bathymetric and circulation maps of the world's sea and oceans, this book is a treatise on marine life as well, with a reference encyclopedia on the marine animal phyla. Half price offers may be available in leading bookshops. Recommended.



Microsoft Oceans

CD-ROM
Publisher: **Microsoft Corporation, 1995**
CD Set: **473-052-009**
Price: **£29.99**

This CD-ROM introduces the browser to the mysterious world of the oceans. For anyone with a 486 Multimedia IBM compatible computer with at least 8 MB RAM, and an interest in the oceans, this product is a must. The opening illustrated menu divides the subject matter into Marine Life, People and the Sea, Guides and World of Water. The contents include over 700 articles, 1,000 photos and 1,000 audio clips, plus over 100 video sequences. This is entertainment rather than an academic text. Therefore, it will make an ideal Christmas present. Serious students should have a look at the quizzes before they buy. If they can answer every one correctly they might get frustrated. Although the UK version has British spellings, the examples of crabs, etc. are mostly foreign. Microsoft Encarta is sometimes better for hard information on marine invertebrates, as well as the explanation about the tides.

Secrets of the Sea

Author: **Linda Gamlin**



Publisher: Reader's Digest, 1995
ISBN: 0 276 42167 1

This comprehensive book is filled with hundreds of excellent colour photographs and up to date information about the oceans and marine life. Like the rest of the books in the series the 160 pages are written up like a magazine on A4 sized pages, and this makes it easy to read. Very good.

UK Digital Marine Atlas

By NERC Proudman Laboratory, Birkenhead, British Oceanographic Data Centre (BODC), PC Computer Discs x6. Price: £65.40 inc VAT

This a digital atlas research tool that runs in MS-DOS and will work on a 386 PC Computer. It charts all the marine conservation areas amongst masses of other information like the distribution of cetaceans in British seas. Because of its price it is really only for professionals, but if you get the chance definitely take a look at the program.

Wild Willy

30 minute video recording Living Planet Productions, 1996

One of a series of 13 video recordings from a team in Bristol, this one is good fun to watch. It is not narrated in the even monologue that you hear so often on television wildlife documentaries. The action photography is its strong point, and the final shots of the pod of killer whales stunning the herring is better than any captive show. The text is a bit too simple, but should appeal to children.

Other subjects covered in the series include Otters and the liner oil tanker spill and its impact on the Shetland Isles.

Understanding Marine Biodiversity

National Research Council (US); National Academy of Sciences (US)

Publisher: National Academy Press, 1995
ISBN: 0-309-05225-4

This small volume details some of the latest worldwide information on the marine world, with references. It is written in report style and not directed at the general reader.

A Students Guide to the Seashore

Authors: J.D. Fish & S. Fish

Publisher: Cambridge University Press (2nd ed), 1996
ISBN: 0-521-46819-1 (p/b), 0-521-46279-7 (h/b)

Although not including as many species as the Collin's book this guide goes into more detail about the individual species and is a valuable guide for the student. Very good.

For information on environmental organisations in the United Kingdom, the reader is advised to consult the Who's Who in the Environment reference books published by the Environment Council (Tel: 0171 824 8411). There are separate volumes for England, Scotland and Wales, and PC disks for computer users. These essential reference books should be in your local library.

For more detailed information about these books and British marine life join the British Marine Life Study Society, Glaucus House, 14 Corbyn Crescent, Shoreham-by-Sea, Sussex BN43 6PQ. Tel: 01273 465433.

HERPTILE Book Reviews

Compiled by Bob & Val Davies

Rattler! A Natural History

Author: Chris Mattison
Publisher: Blandford, 1996
Hardback, £20.00, 144 pages,
ISBN 0 7137 25346.

This latest book from Blandford is an intriguing and competent study of the two genera of Rattlesnakes: the Rattlesnakes (genus *Crotalus*) and the Pygmy Rattlesnakes and Massasaugh (genus *Sistrurus*).

The book is divided into five chapters with a 'Further Reading' section at the end. Chapter one is basically descriptive covering size, shape, colouration, etc. This is followed by details of distribution, habitats, behaviour and reproduction. Origins and evolution are dealt with in chapter three. 'Interaction with Humans' (chapter four) makes interesting reading.

Chapter five is a catalogue of species describing the 27 species of *Crotalus* and the three *Sistrurus* species. Each is illustrated — photographs throughout the book are mainly of excellent quality and are complemented by diagrams and maps.

Due to the fear (even hatred) of Rattlesnakes and their usefulness (for skins and medicine) they have been hunted and killed for many years. Pollution and habitat destruction have also further reduced their numbers but there are now calls for conservation of the most threatened species.

The verdict — well worth reading, a fascinating insight into this group — it may even change your views on Rattlesnakes!

The New Chameleon Handbook

Author: Francois Le Berre
Publisher: Barrons (New York)
Paperback, £6.50, 128 pages,
ISBN 0-8120-1805-2.

Until relatively recently Chameleons were classed as short-lived, difficult species and almost impossible to breed. Several species are now bred regularly in captivity and a book on the subject is welcome. The New Chameleon Handbook contains information on all aspects of husbandry.

Various parameters (temperature, humidity, etc) are provided for the species but these parameters may not be absolutely rigid.

The book packs lots of information into its small size and is useful for anyone interested in Chameleons and contains

numerous pictures of species not previously seen in books. A worthwhile buy at the price.

The Care and Maintenance of Day Geckos

Author: Sean McKeown
Publisher: Advanced Vivarium Systems (California)
Paperback, 174 pages.

The beautiful Day Geckos (*Phelsuma* spp.) of Madagascar have been exported for years and have become very popular in the hobby due to their attractive colouration and diurnal habits.

Comprehensive information on housing, feeding, breeding and disease is provided and a catalogue of species contains numerous photographs which aids identification. Distribution maps showing the location of each species also appear and a complete list of species is given although, as usual in taxonomy, names are occasionally changed as further information emerges. Certain *Phelsuma* species are no longer available as they are now protected but this book is certainly worth buying if you wish to keep any of the available ones.

Pythons of the World. I: Australia

Authors: David G. Karker and Tracey M. Barker
Publisher: The Herpetological Library, Advanced Vivarium Systems, Inc., Lakeside, California
171 pages, line drawings and colour plates.

The authors of this excellent book keep and breed the 'largest collection of Pythons in the world'. The treatment given to all aspects, including breeding, is extremely thorough and the quality of the colour plates superb.

Twenty-one taxa are described in minute detail — each with a line drawing of the head scalation, distribution map, breeding statistics, details of habitat, size, sexing, food preferences, etc. Although there is no general index there are various appendices, a glossary and list of cited literature. The classification used follows recent revisions.

As more Australian Pythons are being bred in captivity their popularity is increasing and, although not for beginners, anyone with an interest in snakes should find this book fascinating and useful.

Leaving tanks aside, fishkeeping is generally reputed to be a soothing hobby; and so it is — as long as you also discount broken filters, mysterious epidemics, algae, herons and so on. There is however, one aspect of the hobby that really winds me up. It's just a personal thing you understand, but I hate 'Tat in Tanks'.

Now I'm not against gimmicks entirely (I've tried enough of them). Some of today's realistic plastic plants are really excellent and an absolute godsend to aquarists who keep leaf-munching species, or cichlids that move so much gravel you could hire them out to Wimpey's. They can also be a great spawning aid. But plants that require you to wear sunglasses before you can even look at them! Come on!

I fully realise that there must be a massive market out there for day-glo plants. If there wasn't they simply wouldn't be on sale; manufacturers may have dubious taste but they're not stupid.

It's the same with plastic oysters that open up to release bubbles of air. Youngsters love these gimmicks and good luck to them; many a young fishkeeper has been brought into the hobby this way, only to go on to great things later. For me, however, the sight of these grotesque objects on the shelves of the retail outlets is like a red rag to a sexually active, male member of the bovine fraternity.

For some years now I've threatened to enter a 'bad taste tank' in my local Aquarist Society's annual Home Furnished competition. The bottom of the tank would, of course, be covered in multi-coloured gravel. Plastic plants of bright orange, lime green and vivid pink would vie for attention with candy striped rocks and lumps of blue and yellow glass. There would be bubbles everywhere, driving waterwheels, propelling divers up and down fast enough to make you dizzy, gurgling upward from a miniature of the wee boy of Brussels and emerging as belches from the mouth of unifelike frogs (thinks: there must be a way of creating coloured bubbles!)

As yet I'm undecided about the tank itself: one idea is to link a lot of those little hexagonal (or is it octagonal!) jobs into one big

A Monument to Bad Taste

Trevor Gray was fine — until he opened his eyes and looked at a fish tank!

complicated configuration, a bit like a hamster rotostack system gone mad. That way there could be varying themes of decor, or a different colour scheme in each

section. Mermaids on rocks and 'No Fishing' signs in one area, shipwrecks in another, while the remainder could be given over to sunken cities and bridges.



PHOTO: HP & C. PEDNOR

spaceships or similar flights of fantasy.

Another advantage of this system would be that I could use a different colour of gravel for each part, or even glass marbles if the mood so took me. The

lighting could be varied too; I'd have a different hue of bulb or strip light over each individual unit. One big problem is, I haven't worked out how best to heat or filter such a set-up.

Certainly your bog-standard rectangular tank would not be nearly exotic enough for something of such lavish ambition. If a

thing like this is worth doing it's got to be worth overdoing. I suppose I could always disguise the tank as something else: a television set perhaps, maybe the windows of a coach, or a telephone box lying on its side. I did toy for a while with the idea of coloured water but finally realised that would only detract from the gaudiness of the furnishings.

So why haven't I done any of this yet? Well, cost mainly. I'm too poor and too mean to spend all that money on something that I'd certainly never use again. That, and the fear that if I did too good a job I might actually win. ("Oh no you wouldn't!" that's the voice of the Club Show Judge ringing in my head.)

Fish! Of course there'd be fish; and I don't mean coloured Glassfish. Never in a million years! If there's one thing I detest even more than the above list, it's coloured Glassfish. I consider them to be an abomination that hopefully is on the way out. There are still some around but I'm pleased to see fewer shops in my locality stocking them these days.

No, in all fairness there could only be one species of fish that I could introduce into such a hideously monstrous set-up. Blind Cave Fish. That's the only way I wouldn't be living in fear of the RSPCA battering down my door waving writs charging me with causing unnecessary suffering to piscine livestock.

I picture myself undertaking this labour of loathe, standing back, proudly admiring my finished handiwork, taking photographs to send to all the aquatic magazines. This is the point at which I usually wake up screaming, and rush downstairs to check out my perfectly normal tanks! Can anybody out there suggest a cure?

Chinese Myths & Dragons

Many, many moons ago China experienced a total eclipse of the Sun. Horrified at the darkness the peasants gathered and decided it was a devil that was stealing the Sun, so they shouted and banged things to drive it away. The local Holyman prayed to the Dragon King (their symbol of power) to help too. It worked! The Sun slowly reappeared with the crescendo of noise.

So, ever since then, the Chinese invoke noise to drive away the Devil and the Dragon became a symbol of good fortune. That is why their fireworks are just bangers, not pyrotechnics, why they smash cymbals together as hard as possible, and when the devils have gone, a dancing Dragon brings good luck too. (Unlike the English who's St. George killed the evil Dragon!)

What if you are a Chinese Aquarist? Then bring good luck and fortune to your house by owning a Dragon Fish (as well as making lots of noise).

The Dragonfishes

We call the Dragonfish the Arowana. They are members of the freshwater fish family Osteoglossidae (means bony-tongued) and include related species in South America, Africa and Australasia: so closely related that they are part of the evidence that these land masses were once connected.

The family includes the largest freshwater fish in the World, *Arapaima gigas*, the Amazonian Arowana, which can reach 4m long and weigh 200kg. Its oil-rich, red-coloured flesh is salted and dried for eating. The other South American Arowanas are the Silver *Osteoglossum bicirrhosum* from the Amazon basin and the Black Arowana *Osteoglossum ferreirai* from the River Negro. These are common food fish and rows of the species, some up to 1m long, can be seen hanging up in local fish markets.

The fish are male mouth-brooders, so wild-caught fish are stripped of their fry which, if they survive, find their way into the pet fish trade and are sold as Black or Silver Arowanas to European aquarists (often as 'Arawana').

The Asian Arowana is the true Dragon Fish, it is *Scleropages formosus* which has three colour varieties, Green, Gold and Red. Note that some books call the *S. formosus* a Barrumundi, but these fish, from Australia, Thailand and Papua-New Guinea are actually *S. jordani* and



Ever wondered why the Chinese let fireworks off — but only bangers, and in the daytime. Why do they bang cymbals — but not to music? And why dance around as dragons? ... **David Ford** of the Aquarian Advisory Service searches for the answers.

S. leichardti — also called the Saratoga in Australia. The true Asian Arowana looks

very like its American cousin but has longer dorsal and anal fins. So many Orientals want to own a



MAIN PICTURE The Chinese Dragon at Haw Par Villa, Singapore.

ABOVE Certificated Arowana for sale at Van Cleef (now called Fort Canning) Aquarium, Singapore (if you have to ask the price you can't afford them!)

RIGHT Captive-bred Dragonfish, Gold variety with implanted ID tags.



PHOTOGRAPHS BY THE AUTHOR

Dragonfish, especially the rare Red form, that it has been overfished and the Asian Arowana is now an endangered species listed in CITES. In order to meet the insatiable demand in the Orient where they sell at hundreds, even thousands, of dollars each, the fish are being farmed in Singapore.

Wild fish cannot be marketed because of the CITES order, so the farms prove that their fish are captive-bred F2 (ie. second generation filial, where filial means son or daughter) by tagging them.

Certified Dragons

The Arowanas are farm-bred into pure colour lines. Green, Gold and Red and the F2s sold at about 15cm size. The fish is identified by implanting a radio frequency identification metal strip in a back muscle. This 'read only' tag is encapsulated in a special biocompatible glass bead only 12mm long and 2mm wide. It remains in situ for life with no apparent reaction or harm to the fish and quite invisible under the large scales. However the individual code it carries can be read as a radio frequency by an electronic reader at distances up to 700m, instantly and without error.

A certificate accompanies the individual fish when it is sold, anywhere in the World, issued by the Singapore Government with the ID recorded. A portable reader such as the 'Datamars R/PO series' can show that an individual Dragonfish in an aquarium is CITES Approved for private ownership.

All Chinese aquarists want a Dragonfish, but such expensive, technologically approved specimens are too attractive to the Japanese and that is where most specimens are being sold. It should bring them luck.

TROPICAL

Breeding Corydoras and other Armoured Catfish



If you read much of the literature on Corydoras the average aquarist might be forgiven for thinking that they all spawn in

DEREK LAMBERT CHRONICLES
HIS ROCKY PATH TO SUCCESS

PHOTOGRAPHS BY THE AUTHOR

exactly the same way. The classic formula says they plaster adhesive eggs over the aquarium sides and on broad-leaved plants and then ignore them.

TROPICAL Breeding *Corydonas*

Whilst this is true of some species it is not the only method employed within the genus, but it is true of the most common two species kept and bred by aquarists.

In my early fishkeeping days I used to have various



ABOVE *Aspidoras brunneus* one week old fry.

RIGHT *Aspidoras brunneus* eggs in mop.

species of Catfish and tried to breed *Corydonas aeneus* and *Corydonas paleatus* several times. The idea was to breed the early species first before moving on to the 'more difficult' ones. Several times I bought young fish to grow up and spawn but for some strange reason when they were old enough to breed they just sat there and refused to do anything! I even caged a breeding pair of fish and despite the female laying eggs none hatched.

At this time I got a friend to show me how to sex *Corydonas* just to be sure I was not making a mistake. Originally I had been looking from the side of the fish and going on the generally more plump shape of the female; however, he told me if you look down on a pair you can see the female's body is very much fatter than the male's. This is particularly noticeable when the fish are well-fed and

well roed up. Newly imported specimens are, however, often very thin and this method of sexing is not so reliable. Then you need to look at the finnage closely. Males have their dorsal and pelvic fins more pointed than females. This can be seen in most species from about four months of age so can be used to sex even quite small fish.

Having convinced myself I had been working with pairs or groups containing both sexes I eventually decided *Corydonas* were just too difficult for me and

concentrated on other groups of fish.

You know, easy ones like Neon Tetras!

Now we move on 10 years to when a good friend of mine became fed up with breeding *Corydonas panda* and wanted to get rid of the rest of the youngsters to make way for a new species of Catfish. Being in the right place at the right time I obtained a group of them and picked the breeder's brains a little about how she bred them. Apparently, instead of spawning on the aquarium sides and broad-

leaved plants this *Corydonas* preferred to lay its eggs in wool mops strewn about the aquarium bottom much like a Killifish. The eggs could then be pulled off and hatched in a separate tank. For this reason, when I got them home, the fish were placed in a 2ft aquarium with lots of mops on the bottom.

I fed them huge amounts of baby Brine Shrimp as well as *Daphnia* and Bloodworms and a good quality flake food. Within six months the females were filling up with roe and soon started to breed every few weeks. True to the breeder's prediction they spawned into the mops and laid 20 to 30 eggs at a time. These



were very large and easy to pull off. I placed them in a 12x 8in aquarium spread out over the bottom and within three days the eggs had hatched producing a bunch of what looked like little tadpoles. These started to feed a couple of days later and ate newly-hatched Brine Shrimp straight away. Within 12 weeks they had reached a good size and I was delighted that I had finally cracked *Corydonas*.

Spurred on with this success I hunted out some very nice *Corydonas paleatus* (I hate being beaten by a

TROPICAL Breeding *Corydoras*

fish) which looked to be in breeding condition with the females nicely roed up. I placed them in an 18x12in tank and fed them lots of live food. After a change of water using cooler water they spawned and I removed the parents. The days went by and the eggs failed to hatch. Try as I might despite several attempts I could not get those pesky fish to produce viable eggs.

The next *Corydoras* type fish I came across on my travels was *Aspidoras brunneus*. This is the darkest of all the *Aspidoras* and has been given the common name of Dusky *Aspidoras* because of its colouration. This genus is only very rarely bred in the UK but despite my failure with Peppered *Corydoras* I was determined to have another try at another species in this group.

Because of the price I had to limit myself to a nice-looking pair and set these up in an 18x 12in tank. Once again I fed them lots of live foods and the female was soon obviously full of eggs. I decided to give the pair a variety of potential spawning sites including mops on the bottom of the tank, broad-leaved plants and a mop suspended from the surface. It was this suspended mop that the pair selected to spawn in and the eggs were placed right at the top under the water's surface.



ABOVE
Aspidoras brunneus female.

BELOW
Corydoras adolfi.

Once again I pulled the eggs off and spread them out over the bottom of a small tank. After five days it was obvious that they were not going to hatch despite fry being clearly visible in them. This was different than with the Peppered *Corydoras*

because those eggs failed to develop at all. What I decided was the problem was my very hard alkaline water so I changed the pair over to rainwater and within a couple of weeks had my first batch of baby *Aspidoras*. These were reared on



newly-hatched Brine Shrimp like the *Corydoras panda* and grew just as fast, reaching saleable size in only 12 weeks.

Now some friends of mine have recently been breeding albino *Corydoras aeneus* and offered me the adult pair to try with. Glutton for punishment that I am, I just could not refuse them. I set them up in a 24in tank with various broad-leaved plants and fed them lots of live food. The female looked nice and plump and every so often the pair would start courting but no eggs would be

produced. This has gone on for weeks now and I think I am on to a loser again. Why the two easiest and most commonly-bred *Corydoras* should refuse to breed for me I have no idea. Still that is the nature of this hobby and no matter how easy or difficult a fish is said to be everybody finds certain species just refuse to breed for them.

Talking to aquarists who have worked with other *Corydoras* species has yielded all sorts of interesting alternative breeding methods. For a start, the best method of breeding *Corydoras pygmaeus* is in an 18in aquarium with a large clump of Java Moss in it and a group of about three or four pairs. These will produce single quite large eggs which are laid into the Java Moss. The adults

will not harm the eggs or fry if they are well fed with live foods, so all you have to do is remove the babies as they appear and rear them on in a separate tank.

Another species which likes to lay its eggs in a clump of plant is *Corydoras adolfi*. Once again it is a good idea to use a group of three to four pairs in a 24in aquarium and a large clump of Java Moss. They must be well fed with live foods but in the end should start spawning every three weeks. Unlike the Pygmy *Corydoras* this species produces batches of up to 50 eggs a time and will eat both the eggs and fry, so you have to remove the clump after each spawning and hatch the eggs out in another tank.

One theme which commonly runs through discussions of how aquarists have successfully bred *Corydoras* is the fact they seem more likely to spawn at certain times of the year than others. In the wild this

would correspond to the rainy season when their rivers have flooded the surrounding area.

This creates a whole range of new feeding opportunities and provides lots of great places to hide their eggs. In many cases the stems of submerged grasses are used but tree branches and other plants may also become potential spawning sites.

Large partial water changes using cooler water than that in the aquarium will make most *Corydoras* think the rainy season has arrived and this may well trigger them into spawning.

Providing suitable spawning sites can also have an effect. Some people suggest certain species will not breed unless a spawning site which mimics the one they use in the wild is present. So give your fish plenty of choices and hopefully one will suit them.

Water quality is also important. Fish like

Corydoras aeneus and *Corydoras paleatus* will successfully breed in any water (except mine) but other species which come from very soft acidic water will need these sort of conditions if their eggs are to hatch. Personally I have found rainwater collected in a water barrel which contains peat is ideal for any of the soft water fish I work with. You might have more money than me and splash out on a Reverse Osmosis unit to produce soft water; this method is certainly more reliable than doing a rain dance was last year, but I prefer to stick as close to nature as possible with my fish.

Another vital thing to check with any *Corydoras* you want to breed is the barbels. These are used by both sexes during courtship to excite each other and if they have become badly worn, then the fish will be almost unbreedable. What is worse is that once worn

down in this way the barbels rarely regrow and may be the site of infection.

Finally, I have to admit that I am just stubborn enough to keep on trying with the two common species which will not perform for me. Now, however, I am going to try a method which has proven 100 per cent reliable with other fish which have caused me problems, this is benign neglect. You put the fish concerned in a bottom tank tucked away in an odd corner of the fish room. Throw in food and change the water regularly but under no circumstances look at the fish!

This has recently happened with my Peacock Gobies which I have been trying to breed for some time.

At last! I have several broods of these lovely creatures growing up thanks to the 'benign neglect' method. That, however, is another fishy tale.

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SHORE WATCH

An **ABC** of Rockpooling

X

XANTHIDAE is a family of Crabs that includes the widespread Hairy Crab, *Pilumnus hirtellus*.

XANTHO is a genus of medium-sized Crabs of the family Xanthidae, known in Britain as Furrowed Crabs.

XIPHIIDAE are the family of bony fishes with only one member known as the Swordfish, *Xiphias gladius*, which has a long pointed snout used to stun fish in which it will then eat. Andrew Johnson, from the University of Glasgow, spotted a two metres long (including the long sword) Swordfish five miles out in the Firth of Lorne in September of this year. The sea was a beautiful flat calm and the Swordfish leapt from the water eight times in full view of the divers on the charter boat. This fish is a widespread and solitary fish throughout the warmer oceans, but it is an extremely rare vagrant in British seas.

The Furrowed Crab, *Xantho incisus*, is only found between the tides in the south and west of Britain.

PHOTO: ANDY HORTON

By December all of the mobile animals of the shore are likely to have moved into deeper seas and all the rockpoolers are safely tucked inside their homes preparing for the festive season.

There is not much else to do on the shore except to watch the sea birds. Conceivably, a rare Arctic fish could turn up, but I have never been lucky enough to find one.

When I venture down on



BY

**ANDY
HORTON**

the shore to collect Cockles and Mussels to feed my fish, I usually have a quick look around. The large brown Wracks are still draped across the rocks but the smaller annual red and green seaweeds

will have withered. Even after storms there is little to be discovered on the Sussex coast. Perhaps Cornish rockpoolers have more luck in December? I would be interested to know,

Y

YARRELL, William, was a Victorian naturalist whose numerous writings included the first comprehensive record of British fishes in two volumes called 'A History of British Fishes'.

YOLK SAC LARVAE are the larvae of fish that still contain the yolk sac which is used as food.

YONGE, C.H., was a marine biologist and Professor of Zoology and Chairman of the Scottish Marine Biological Association whose name will be etched in the lore of the British seashore because of three excellent books: the original Collins Pocket Guide to the Seashore compiled with John Barrett in 1958 and reprinted almost every year until recently replaced by a new guide (see Christmas Book & CD Reviews), the Collins New Naturalist 'The Seashore' which is an extraordinarily well written book first published in 1949 and reprinted on numerous occasions and has not been surpassed, as well the excellent 'Living Marine





Colonies of the zoanthid *Parazoanthus eximiae* are found in the shallow seas in the south-west.

PHOTO: RICARDO MARTINEZ

Please send reports to: Shore Watch Reports, British Marine Life Study Society, Glaucus House, 14 Carbyn Crescent, Shoreham-by-Sea, Sussex. BN43 6PQ.

If you are in doubt about the identification of any species please say so and give as full a description as possible. If you know the scientific name please use it as well as the common name. All letters will be replied to. If you want a complimentary copy of the journal *Glaucus* with your reply, please enclose stamps for a letter up to 200g (43 pence or 57 pence).

Molluscs' co-written with T.E. Thompson and published in 1976.

Z

ZEIFORMES are an order of marine bony fishes which are described as deep-bodied because the body is nearly as high as it is long. These fish are very narrow, and viewed from the front, the two uncommon British representatives, the John Dory, *Zeus faber*, and the Boar Fish, *Copros oper*, can be easily overlooked.

ZIPHIDAE are a family of toothed predatory whales known as Beaked Whales. At least seven species have been recorded in British seas.

ZOANTHARIA is the class, often called Hexacorallia, which comprises the true Sea-anemones in the order Actinaria, and true Stony Corals in the order Scleractinia, previously called the Madreporaria, as well as other orders. The other distinctive class included in the Anthozoa (Peter Hayward in the new Collins book has omitted

the Anthozoa as a Class. A year earlier he divided Anthozoa into two sub-Classes of Alcyonaria and Zoantharia) are the Alcyonaria, or Octocorallia, which includes the Soft Corals like Dead Men's Fingers and the Sea-fans and Sea-pens, with several British representatives.

ZOANTHIDEA are an order of solitary or colonial polyps looking like miniature Sea-anemones, and they provide a colourful decoration to underwater rocks in the warmest of the shallow seas around the British Isles.

ZOEA are the early larvae of a decapod crustaceans, eg. Crabs, Shrimps and Prawns. The Common Brown Shrimp, *Crangon crangon*, hatches out a first zoea from the 'berried' female at about 1.5mm long and moults to the second zoea stage to about 2.5mm within 24 hours. When the shrimp moults (ecdysis — ecdysis was explained

in the March issue) and the first pair of walking legs develops, the larvae is then called a mysis. The crab zoea metamorphose into a megalopa.

ZONES are biogeographical areas with a characteristic flora and fauna. A rocky shore can be divided into three or more zones according to the dominant brown *Fucus* seaweeds.

ZOO- is a prefix to a word meaning animals. Bio- as a prefix means all life forms.

ZOOIDS are the polyps (polyps were explained in the August issue) of cnidarians (Jellyfish, Hydroids, Sea-anemones, Corals, etc).

ZOOLITHS are animal fossils.

ZOOLOGY is the study of animals.

ZOOPLANKTON are the animal representatives of the planktonic community which comprises mostly of crustaceans (90 per cent) including

Copepods and larvae of Crabs and Shrimps, etc.

ZOOXANTHELLAE are symbiotic algae found in the tissues of at least four species of British sea anemone, and are ubiquitous in shallow water tropical anemones and corals. The anemones will not thrive in the long term without the algae, which require light levels of 2000 to 4000 Lux which the aquarist is rarely able to provide.

ZOSTERA is the generic name for one of the few flowering plants found in the shallow sea commonly known as the Eelgrass.

ZYGOTE A Zygote is a fertilised reproductive cell, as a result of the combination of sperms with eggs (ova).

Classifications change with new evolutionary and scientific evidence; therefore the ABC of Rockpooling will be continually updated and

corrected on the Internet from 1997. This will give you the opportunity to read the text if you have missed an issue. Look in this column for the World Wide Web address during the forthcoming year. All the best for the Festive Season and beyond.

Pimplet Anemone, *Anthopleura bellii*, is one of at least four British shore anemones that always have symbiotic algae in their tissues. Chlorophyll in the tissues result in the green hues which will disappear when the algae die in conditions of insufficient light. The other common shore anemones that contains zooxanthellae are the Snakelocks Anemone, *Anemonia viridis*, and the Daisy Anemone, *Cerium pedunculatum*.

PHOTO: ANDY HORTON



TROPICAL



Hong Kong skyline from the Star Ferry.

The Fish of Hon

IGGY TAVARES TAKES TIME OUT TO VISIT THE TEEMING AQUARIUM SHOPS

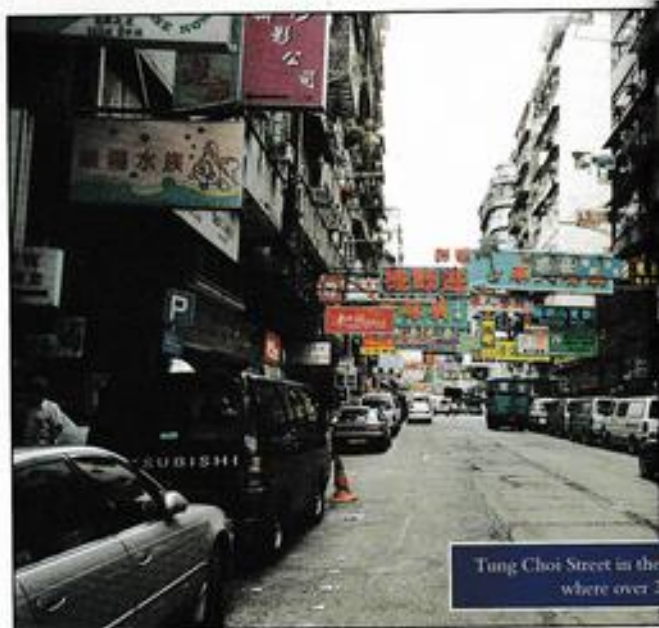
PHOTOGRAPHS BY THE AUTHOR USING A PENTAX Z-20 CAMERA

Hong Kong is a busy, gaudy city of neon lights and skyscrapers, street markets and large department stores, where East met West and produced a sprawling city of dazzling contrasts. Hong Kong province comprises of Hong Kong Island, Lantau Island and the New Territories on

the mainland as well as hundreds of small islands.

With the impending return of Hong Kong to China in July 1997 I jumped at the chance to visit and attend a Cancer Conference here in October 1995.

My plane came in on the tail of a typhoon which had closed Hong Kong down for the day. The bumpy approach and landing can best be described as similar to a Disney World pleasure ride. I was based in a nice three star hotel in Wan Chai, the business end of the city, with an excellent view of the Bay. Hong Kong city comprises but a small northern area of the Island and Kowloon on the mainland which are connected by the Mass Transit Railway underground (MTR) and by



Tung Choi Street in the where over 2

the Star Ferry. My conference was sited at the Convention and Exhibition Centre which was also hosting an interesting International Toy Fair and a

Leather Handbag and Shoes Exhibition on different floors. I understand that this Centre host international happenings most weeks of the year.

Shops ing Kong



EATING OUT

Eating out was a great experience, with every type of Asian Restaurant to tickle

your palate. These included Thai, Indonesian, Malaysian, Indian, Korean, Japanese, Singaporean, and, of course, Chinese Restaurants as well as French Bistros and Italian Spaghetti Houses. There were several Macdonald Restaurants which are very

cheap compared to the UK and these were always packed. Other interesting locations are the bars such as Ned Kelly's for those who want a real pint of beer. Many fish restaurants had aquariums containing live lobsters and sea fish such as



TOP OF PAGE Most shops had Goldfish for sale.

RIGHT Pre-bagged fish work out cheaper.



TROPICAL
The Fish Shops
of Hong Kong



ABOVE Not a poster but marine fish crowded together.

Bass. Customers chose the live fish they wished to eat which was then caught and cooked. I did not have the heart to do this myself and no doubt missed a great culinary experience.

TUNG CHOI STREET

Keeping fish in Hong Kong is supposed to bring good luck, and even Marks and Spencer, which charges double the UK price for

its goods, has a large show aquarium near one of its entrances. I had heard that there were a lot of fish shops in Hong Kong and decided to investigate. My enquiries took me to the Mong Kok area in Kowloon. I got there on the MTR underground railway system which is modern, clean, fast, efficient and air-conditioned. I got off at Mong Kok station and headed for Tung Choi

Street which runs parallel to the very long Nathan Road

BELOW Red Dragon for £6,800 (over 2ft long)!



TROPICAL
The Fish Shops
of Hong Kong

and crosses Argyle Street.

The south side of Tung Choi Street is a Ladies' Clothes Market, but the north side has a large number of over 20 fish shops intermingled among other business ventures. I, like any other fish hobbyist would be, was in for a treat.

THE FISH
SHOPS

One of
the first
things

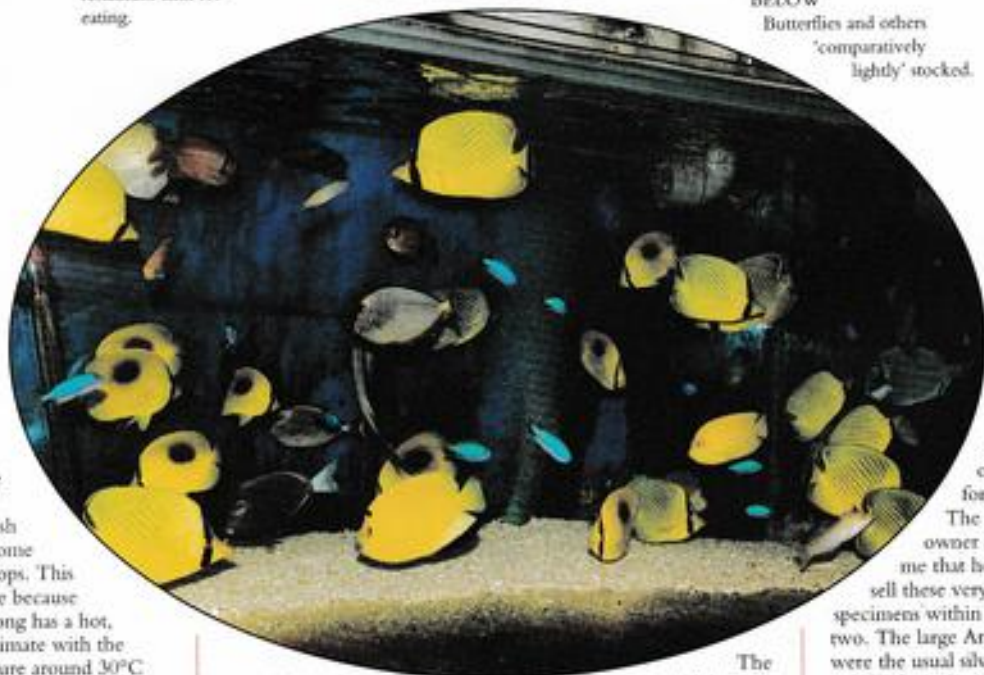


ABOVE
Sea fish in a
restaurant tank for
eating.

in large plastic vats. The costs of goldfish depended on size, colour and strain, but were much cheaper than in the UK.

Arowana: Another very popular fish in Hong Kong, judging from the availability in the shops, is the Asian Arowana.

These ranged in size from young 6in silver coloured specimens at £17 to very large



BELOW
Butterflies and others
'comparatively
lightly' stocked.

to catch one's eye is the racks of bagged fish outside some of the shops. This is possible because Hong Kong has a hot, humid climate with the temperature around 30°C when I was there. A whole variety of fish were bagged up, from large Swordtails and guppies to various tetras and young Malawi cichlids. Three or four bagged up fish were cheap at £1 to £2.

Goldfish:
The majority of shops were on the small side with 20 to 30 medium sized aquariums. A lot of them sold goldfish which were housed in clean but crowded conditions.

The goldfish came in every colour and strain and I would guess that this was the mainstay of the fish industry in Hong Kong. Some shops also sold Koi which were usually housed

specimens of over 2ft for £6,800. The shop owner assured me that he would sell these very big specimens within a week or two. The large Arowana were the usual silver coloured specimens, but there were also some of the so called Red Dragons, which are now also available in the UK. These are apparently farm bred but I was not able to ascertain the

TROPICAL
The Fish Shops
of Hong Kong

country of origin.

Discus and Cichlids:
Discus was another popular
fish and relatively cheap
compared to the UK. A

available. A few shops also
sold the larger *Aulonocara*
and *Haplochromine* species
from Lake Malawi but I did
not see any Lake

Tanganyikan
species.

Others:
Many large
catfish were also
available with a
1ft Red-tailed
Cat costing
£170. Our
bread and
butter fish were
very cheap with
Neons,
Swordtails,
Guppies and
other costing
around 30p
while Black
Phantoms and
medium Angel
fish were only
80p. These
were even more
economical to
buy pre-bagged.

Marine Fish:
At most, there
were five
marine shops in
Tung Choi
Street and these
were closed on
a couple of



ABOVE: Discus crowded together but healthy looking.

beautiful pair of
fully grown
Cobalt Discus
were to be had
for only £60
while in the UK
they could go for
£300 to £400.
There was a
whole range of
different discus
strains and sizes
available
including Pigeon
Blood starting at
£4 and going up
to £60. The
common, larger
South American
and Central
American cichlids
available in a few
shops were in fact
more expensive
at £12 to £60
according to size.
Blood red Parrot
Cichlids were
also widely

BELOW: Large Malawi Cichlids in a crowded tank.



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1.5' x 18'	£67.86	1.5' x 20'	£75.40	1.5' x 22'	£82.94	1.5' x 24'	£90.48	1.5' x 26'	£98.02
16.5' x 8'	£38.28	16.5' x 10'	£47.85	16.5' x 12'	£57.42	16.5' x 14'	£66.99	16.5' x 16'	£76.56
16.5' x 18'	£86.13	16.5' x 20'	£95.70	16.5' x 22'	£105.27	16.5' x 24'	£114.84	16.5' x 26'	£124.41
20' x 10'	£58.00	20' x 12'	£69.60	20' x 14'	£81.20	20' x 16'	£92.80	20' x 18'	£104.40
20' x 20'	£116.00	20' x 22'	£127.60	20' x 24'	£139.20	20' x 26'	£150.80	20' x 28'	£162.40
20' x 30'	£174.00	20' x 32'	£185.60	20' x 34'	£197.20	20' x 36'	£208.80	20' x 38'	£220.40
26' x 8'	£60.32	26' x 10'	£75.40	26' x 12'	£90.48	26' x 14'	£105.56	26' x 16'	£120.64
26' x 18'	£135.72	26' x 20'	£150.80	26' x 22'	£165.88	26' x 24'	£180.96	26' x 26'	£196.04
26' x 28'	£211.12	26' x 30'	£226.20	26' x 32'	£241.28	26' x 34'	£256.36	26' x 36'	£271.44
33' x 22'	£210.54	33' x 24'	£229.68	33' x 26'	£248.82	33' x 28'	£267.96	33' x 30'	£287.10
33' x 32'	£263.66	33' x 42'	£401.94	33' x 44'	£421.08	33' x 46'	£440.22	33' x 48'	£459.36
40' x 22'	£255.20	40' x 24'	£278.40	40' x 26'	£302.80	40' x 28'	£327.20	40' x 30'	£351.60
40' x 36'	£417.60	40' x 38'	£440.80	40' x 42'	£487.20	40' x 46'	£533.60	40' x 50'	£580.00

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Den 700	£ 141.10	Den Aquatic Tadpole
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Den 800	£ 160.90	Den Aquatic Tadpole
Den 850	£ 170.80	Den Aquatic Tadpole
Den 900	£ 180.70	Den Aquatic Tadpole
Den 950	£ 190.60	Den Aquatic Tadpole
Den 1000	£ 200.50	Den Aquatic Tadpole
Den 1050	£ 210.40	Den Aquatic Tadpole
Den 1100	£ 220.30	Den Aquatic Tadpole
Den 1150	£ 230.20	Den Aquatic Tadpole
Den 1200	£ 240.10	Den Aquatic Tadpole
Den 1250	£ 250.00	Den Aquatic Tadpole
Den 1300	£ 259.90	Den Aquatic Tadpole
Den 1350	£ 269.80	Den Aquatic Tadpole
Den 1400	£ 279.70	Den Aquatic Tadpole
Den 1450	£ 289.60	Den Aquatic Tadpole
Den 1500	£ 299.50	Den Aquatic Tadpole
Den 1550	£ 309.40	Den Aquatic Tadpole
Den 1600	£ 319.30	Den Aquatic Tadpole
Den 1650	£ 329.20	Den Aquatic Tadpole
Den 1700	£ 339.10	Den Aquatic Tadpole
Den 1750	£ 349.00	Den Aquatic Tadpole
Den 1800	£ 358.90	Den Aquatic Tadpole
Den 1850	£ 368.80	Den Aquatic Tadpole
Den 1900	£ 378.70	Den Aquatic Tadpole
Den 1950	£ 388.60	Den Aquatic Tadpole
Den 2000	£ 398.50	Den Aquatic Tadpole
Den 2050	£ 408.40	Den Aquatic Tadpole
Den 2100	£ 418.30	Den Aquatic Tadpole
Den 2150	£ 428.20	Den Aquatic Tadpole
Den 2200	£ 438.10	Den Aquatic Tadpole
Den 2250	£ 448.00	Den Aquatic Tadpole
Den 2300	£ 457.90	Den Aquatic Tadpole
Den 2350	£ 467.80	Den Aquatic Tadpole
Den 2400	£ 477.70	Den Aquatic Tadpole
Den 2450	£ 487.60	Den Aquatic Tadpole
Den 2500	£ 497.50	Den Aquatic Tadpole
Den 2550	£ 507.40	Den Aquatic Tadpole
Den 2600	£ 517.30	Den Aquatic Tadpole
Den 2650	£ 527.20	Den Aquatic Tadpole
Den 2700	£ 537.10	Den Aquatic Tadpole
Den 2750	£ 547.00	Den Aquatic Tadpole
Den 2800	£ 556.90	Den Aquatic Tadpole
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Den 3100	£ 616.30	Den Aquatic Tadpole
Den 3150	£ 626.20	Den Aquatic Tadpole
Den 3200	£ 636.10	Den Aquatic Tadpole
Den 3250	£ 646.00	Den Aquatic Tadpole
Den 3300	£ 655.90	Den Aquatic Tadpole
Den 3350	£ 665.80	Den Aquatic Tadpole
Den 3400	£ 675.70	Den Aquatic Tadpole
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Den 3650	£ 725.20	Den Aquatic Tadpole
Den 3700	£ 735.10	Den Aquatic Tadpole
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Den 4000	£ 794.50	Den Aquatic Tadpole
Den 4050	£ 804.40	Den Aquatic Tadpole
Den 4100	£ 814.30	Den Aquatic Tadpole
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Den 5100	£ 1012.30	Den Aquatic Tadpole
Den 5150	£ 1022.20	Den Aquatic Tadpole
Den 5200	£ 1032.10	Den Aquatic Tadpole
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Den 5350	£ 1061.80	Den Aquatic Tadpole
Den 5400	£ 1071.70	Den Aquatic Tadpole
Den 5450	£ 1081.60	Den Aquatic Tadpole
Den 5500	£ 1091.50	Den Aquatic Tadpole
Den 5550	£ 1101.40	Den Aquatic Tadpole
Den 5600	£ 1111.30	Den Aquatic Tadpole
Den 5650	£ 1121.20	Den Aquatic Tadpole
Den 5700	£ 1131.10	Den Aquatic Tadpole
Den 5750	£ 1141.00	Den Aquatic Tadpole
Den 5800	£ 1150.90	Den Aquatic Tadpole
Den 5850	£ 1160.80	Den Aquatic Tadpole
Den 5900	£ 1170.70	Den Aquatic Tadpole
Den 5950	£ 1180.60	Den Aquatic Tadpole
Den 6000	£ 1190.50	Den Aquatic Tadpole
Den 6050	£ 1200.40	Den Aquatic Tadpole
Den 6100	£ 1210.30	Den Aquatic Tadpole
Den 6150	£ 1220.20	Den Aquatic Tadpole
Den 6200	£ 1230.10	Den Aquatic Tadpole
Den 6250	£ 1240.00	Den Aquatic Tadpole
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Den 6350	£ 1259.80	Den Aquatic Tadpole
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Den 6800	£ 1348.90	Den Aquatic Tadpole
Den 6850	£ 1358.80	Den Aquatic Tadpole
Den 6900	£ 1368.70	Den Aquatic Tadpole
Den 6950	£ 1378.60	Den Aquatic Tadpole
Den 7000	£ 1388.50	Den Aquatic Tadpole
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Den 7350	£ 1457.80	Den Aquatic Tadpole
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Den 7450	£ 1477.60	Den Aquatic Tadpole
Den 7500	£ 1487.50	Den Aquatic Tadpole
Den 7550	£ 1497.40	Den Aquatic Tadpole
Den 7600	£ 1507.30	Den Aquatic Tadpole
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Den 8150	£ 1616.20	Den Aquatic Tadpole
Den 8200	£ 1626.10	Den Aquatic Tadpole
Den 8250	£ 1636.00	Den Aquatic Tadpole
Den 8300	£ 1645.90	Den Aquatic Tadpole
Den 8350	£ 1655.80	Den Aquatic Tadpole
Den 8400	£ 1665.70	Den Aquatic Tadpole
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occasions that I passed through the street. Every type of marine fish was available and what struck me most, apart from

Jackie's Juniors



Hi Junior Fishkeepers, it's time for fun in this Christmas edition of your own column.

I spent a wonderful weekend at the Supreme Festival of Fishkeeping at Weston-super-Mare at the beginning of November and it seemed that there were even more Juniors around than usual. Saturday was the Juniors' own Fish Show and the organisers had arranged things so that even if you hadn't brought along your own fish you could still take part by adopting a fish for the day. No less than 99 fish made it on to the show benches and while the Judges were picking out the winners there were the knockout Heats of the Furnished Aquarium Race taking place. At the Prize-giving it was felt by all that there were no actual losers as everyone received something for entering the Show but of course some people won more than others — notably Robert O'Grady from Swansea, who walked off with most of the Awards. Later on, Hagen's Geoff Capes took charge of the Tug o' War contests which was all exciting stuff.

Bristol Zoo came up with a brilliant 'Fancy Dress' in which all the Juniors took the parts of animal life in the sea — from Plankton to Sharks — and played out the normal routine of sea-life — mainly big things eating smaller things! However, the moral in the story was shown only too clearly when pollution, in the form of oil, prevented light from keeping the plankton alive which soon meant that all the fishes' natural foods gradually died off.

This storyline was also taken up by Seascale Juniors who presented a live performance on stage — they had also made a video version, too, which was played back a couple of times.

I was happy to receive the full-coloured Aquarian poster from Grant Crabtree, aged nine, from Halifax which was a feature of the Halifax Society's 50th Anniversary Celebrations at the town's Annual Agricultural Show (see October A&P, Society World): I hope you like seeing it, too.)

As it's Christmas time I've only set you one puzzle this month (I expect you'll have enough to play with before the next issue of A&P comes out); see if you can fit together the pieces of this Fish Jigsaw to make up a very popular fish.

In the meantime I hope you have a smashing Christmas and do make your New Year's Resolution to write to me about anything connected with your aquariums.



PHOTO
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Supreme Festival of Fishkeeping



FROGS & Friends

By BOB and VAL DAVIES



HERP FACT FILE

Newts and Salamanders have many predators and have developed various means of defence, one of these being unpleasant or toxic secretions produced by glands in the skin. The toxicity varies in strength and some predators have adapted to eating species which might be unpalatable to others. The poison glands are sometimes concentrated in paratoid glands at the back of the head which may be bent forward or swing at the attacker thus presenting the unpalatable area. The upper surface of the tail may also be well-endowed with poison glands and tail lashing is used by some species, others such as the Lungless Salamanders (*Plethodonidae*) have a weaker tail and undulate it in an upright position. In some cases the distasteful tail may actually be shed leaving the attacker with an inedible morsel.

As with certain Frogs and Toads warning colouration exists in some Salamanders and Newts — such colours may be on the belly, the back or both. Arching the body (unken reflex) to display the bright belly is used by some Salamanders and Newts as it is by Fire-bellied Toads (*Bombina* spp.). Some relatively harmless species are said to mimic the colouration of more toxic species. At least two species, the Sharp-ribbed Newt (*Pleurodeles*) and the Spiny Newt (*Echinotriton*) possess a remarkable defence — their sharp, elongated ribs can protrude through the skin when seized. The ribs pass through enlarged poison glands on the flanks and the poison is injected into the



The protruding ribs are used as a means of defence by the Sharp-ribbed newt.

PHOTO: BOB & VAL DAVIES

predator's mouth. Both species are drably coloured but show some bright red/yellowish areas especially along the sides where the ribs protrude.

The Emperor Newt (*Triton cristatus*) bears a series of bright raised spots along the sides and is said also to be able to protrude its ribs although we have no documentation on this.

Livefoods

In the 'good old pre-pollution days' the garden, or the countryside was the source of livefood for many keepers and hedgerow sweeping was a recommended method of producing a variety of suitable items. With the advent of commercially-produced livefoods most keepers have probably abandoned collecting — partly because it is time consuming and the increased use of pesticides, etc. makes such foods suspect. Even if you do not use garden chemicals the insects or worms may well have moved in from a polluted area.

Amphibian keepers tend to use the garden as the only source of Worms and Slugs —

we harvest huge numbers of Aphids from Sycamore trees in summer and luckily have not had any ill effects in our Dendrobatid frogs. Wild insects are extremely nourishing and we have raised large numbers of Green Tree Frog babies on Aphids. On the other hand we have, on two occasions, lost Pink-tongued Skinks after feeding them Slugs which must have been in contact with insect spray used by a neighbour to destroy caterpillars (unknown to us). The affected specimens became lethargic and produced vile, jet black faeces — they eventually died.

Probably the most common worm is the Brandling — easily recognisable by its red/yellow ringed appearance and the production of evil-smelling yellowish fluid when pressed or

squeezed. They occur where there is rich organic material such as new compost heaps. It is usually recommended that they should be avoided — one report claimed that they cause kidney damage. The Common Earthworm is usually found in the lower (well-rotted) regions of the heap.

The effects of ultraviolet

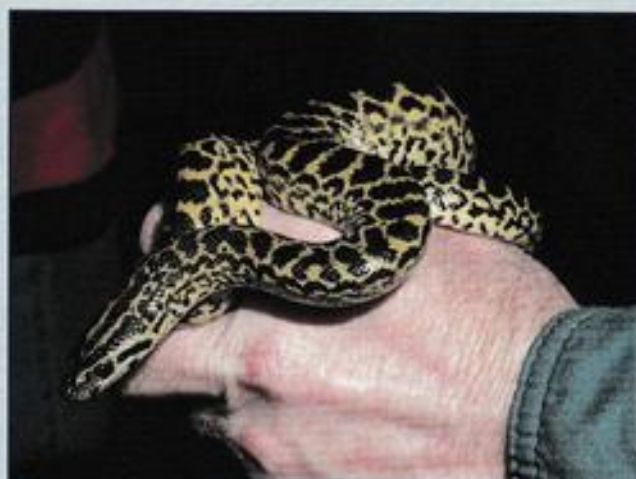
Many amphibian declines occur at high altitudes and one possible culprit (among others) is thought to be increased ultraviolet radiation, which is said to be increasing and is predicted to increase further due to ozone

layer depletion.

Laboratory studies of the effects of UV radiation on tadpoles of the Alpine Newt (*Triturus alpestris*) have shown that in clear water the tadpoles suffered skin damage and died within a few days. The UV sources used were both artificial and natural (sunlight). In the wild UV radiation is filtered out due to dissolved organic matter in the water — thus the Newts are not found in shallow, high altitude pools with clear water.

Other tests have shown the survival of Frog tadpoles to be reduced when subjected to increased ultraviolet. Embryos in Frog's eggs (*Rana sylvatica*) died within 30 minutes of high intensity UVB (part of the

▶ TO PAGE 80



Hatchling anaconda — a contender for the world's largest snake.

PHOTO: BOB & VAL DAVIES

Giant among snakes

Traveller's tales and folklore have often credited the Anaconda (*Eunectes murinus*) with exceptional length. In terms of length they must compete with Reticulated Pythons but they are usually heavier. Anacondas of up to

150ft (45m) long have been reported but never verified — a reward of \$50,000 is on offer for a specimen over 30ft (9.75m) but has yet to be collected. A report from Colombia of a 37.5ft (12m) specimen which escaped after it had been measured is thought to be reliable but cannot be verified. The reward has gradually increased from the original \$1,000 offered by Theodore Roosevelt in 1910.

Researchers in Venezuela are studying these giant snakes as their life in the wild is not well known. So far the longest specimen found by the team was about 17.5ft (5.75m), the heaviest 214lbs (97 kilos).

Although sometimes blamed when humans disappear there is no evidence that they do actually eat people. They will take Caimans, Capybaras, Turtles and Deer — one specimen had swallowed a Turtle with a sharp-edged shell which then sliced open the snake's belly. The snakes themselves are eaten by Caiman. At mating time female Anacondas will often attract the attention of as many as 17 smaller males. Gestation is about six to eight months during which time the gravid female does not usually feed. When she produces her young (up to 80) she will have lost almost half her body weight.



Horned Toad Lizard (*Phrynosoma platurus*) looks fierce, but has a gentle disposition. PHOTO: BOB & VAL DAVIES

Tears of blood

The Horned Toad Lizard (*Phrynosoma* species) has long been a favourite vivarium inhabitant among American keepers because of its bizarre toad-like appearance and gentle disposition, yet few owners have seen them squirt blood from their eyes although they are reputed to do this when threatened. There is a photograph in *Encyclopedia of Reptile, Amphibians and other Cold-Blooded Animals* by Maurice and Robert Burton which shows this phenomenon. The latest research has found that it occurs consistently when the lizards are threatened by dogs but not when attacked by Roadrunners or Grasshopper Mice. Handling by humans does not seem to elicit this response either — our small group has been handled frequently without exhibiting such behaviour. Coyotes and Foxes are predators of the Horned Toads — further tests may show that blood-squirting is used against these.



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ultraviolet wavelength between 290320 nanometres). Fifteen minutes or less of high-intensity UVB did not affect hatching success but this period and level of radiation produced more abnormal embryos at 12°C (54°F) than it did at 20°C (68°F). Ultraviolet A (320-340nm) at twice the normal intensity (i.e. in natural conditions), had no apparent effect on the eggs.

Conservation matters

Conservation of the rare Ploughshare Tortoise (*Geochelone yniphora*) in Madagascar was dealt a serious blow this year when 73 young and two adults were stolen from a captive-breeding facility which was set up by Jersey Wildlife Preservation Trust. Numbers in the wild are estimated at only 400. Smuggling wild animals from Madagascar is causing grave concern — earlier this year a number of Radiated Tortoises, Spider Tortoises and Madagascar Tree Boas were seized in Paris en route to the Czech Republic.

(Source: Traffic Bulletin Vol. 16, No. 2).

Canada

Concern over the dumping of unwanted Red-ear Turtles has led a Canadian vet to start up a programme for returning them to their native habitat. By March 1996 she had already despatched over 1000 specimens.

Every Spring an estimated 50,000 plus Garter Snakes cross a main highway in Manitoba, Canada, when moving from their hibernation dens to the spot where mating takes place. As huge numbers are killed by traffic a special tunnel is being built with a V-shaped entrance to guide the snakes in (similar to our Toad tunnels). The annual migration is attracting huge numbers of tourists. The snakes, after mating, apparently return by the same route until the following Spring.

Jamaica

Jamaican Iguanas were once very common on the island but less than 50 are thought to remain in the wild. Four captive-raised specimens have been released near Kingston to assist repopulation. The once-abundant lizards have been

almost wiped out by introduced animals and habitat destruction.

USA

The State of California is reported to have the greatest number of threatened animals and plants — 280 animals and plant species either listed or proposed under the Endangered Species Act. Among the endangered species is the San Francisco Garter Snake which exists precariously in about two dozen areas. A new \$35 million sewage scheme will include a new home for some of the Garter Snakes whose habitat it affects. Wetlands restoration in the surrounding area is also part of the scheme.

Fashion or cruelty?

According to reports from New York it has become 'fashionable' to wear live Boa Constrictors in public. The fad evidently started among the Puerto Rican population but has caught on with others. Specimens over 7ft may be confiscated as the city has a law

prohibiting the carrying in public of snakes longer than this. We have to disapprove of such treatment which cannot really be good for the animal. Thankfully it is a sight seldom seen in Britain — would it be against the law and possibly classed as cruelty? Many years ago we were told of a man who had quite a large nose and used to walk round the streets with a Jackson's Chameleon clinging to it.

Man eats snake!

As the Festive Season approaches we thought readers might like to hear about something rather different. This story made the news in Florida recently. A man swallowed his wife's 21 in (52cm) Garter Snake after a row about her awful cooking. An operation to remove the snake was carried out after he had suffered terrible stomach pains. The wife has applied for a divorce and is pressing animal cruelty charges. An X-ray photograph of the snake inside the man's stomach appeared in the newspaper.

We would like to wish everyone a Merry Christmas and success in 1997.

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In this article I will explain how you can custom-build a few items that can save you money, and make your life a little easier, regarding the maintenance of a Discus Aquarium and its associated paraphernalia.

AQUARIUMS

First and foremost, we have the actual Aquarium, which I strongly feel should be left to an expert to construct. If this is done, you really do not have to be concerned about such things as leakages, etc.

COVER-GLASSES

One extremely important item, however, which often gets overlooked, is the aquarium cover-glass. I have always used glass for this

BRIAN MIDDLETON PUTS TOGETHER A FEW BITS AND PIECES

PHOTOGRAPH BY THE AUTHOR

purpose rather than plastic, for one main reason, and that is, glass seems to prevent heat loss far better than any other material that I have tried. Another good reason is that if you are lucky enough to have more than one aquarium in the room, or fish house, a well-fitting cover-glass virtually eliminates condensation, which can become quite a problem if it is allowed to.

The main tips I can give you with cover-glasses are, that you make sure that the corners are cut off, this makes the handling of the cover-glass much easier and safer. This can be very simply done by yourself by placing the sheet of glass on

a flat surface, such as a table covered with a few layers of newspaper, and all you need are a straight edge, a pair of pliers, some white spirit, a sharpening stone, and a glass cutter. The knack to cutting glass is not complicated. What you must do is make sure the glass cutter is lubricated by dipping it in the white spirit, and then hold the straight edge firmly on the glass and make one clean cut with the glass cutter. You do not need to press extremely hard the glass cutter should score the glass easily. When the glass is scored, grip the corner you have scored firmly in the pliers and with the score on the top surface of the glass

exert downward pressure on the pliers and the triangle of glass should come away easily and cleanly.

When you have taken the corners from the sheet of glass the most important thing to do is to take the edges off. This again is an extremely simple operation, although it does take a few minutes. It makes the cover-glass a lot more user-friendly. All you need for this is one of the cigar-shaped sharpening stones, the sort you use for sharpening scythes, and a bowl of soapy water. Dip the stone into the soapy water and then smooth the edges of the glass by moving the stone in a circular motion along all the edges of the glass. You will be surprised how easy it is, and how a really smooth edge can be achieved without much effort. To finish off the glass I have found that a

TROPICAL DIY Discus Keeping

most efficient handle can be made by 'borrowing' one of the children's glass marbles and fixing it with a small amount of silicon sealer to the front of the glass.

LIGHTING

I have found that a perfectly serviceable lighting unit can be custom built, using a set of control gear in whatever wattage/length you require. It does not matter if it is for a top or a bottom tank, the method is exactly the same. You need to go to one of the DIY superstore type shops and purchase a metre or two of white guttering with two end pieces; you will also need two Terry type clips. You cut the guttering to about 2in oversize and then fix the end pieces and the Terry clips. You will find that the starter unit will fit comfortably into the guttering and with the aid of a small electrical connecting block and a length of lead you have a portable lighting unit that can be used on a top or a bottom tank, and it actually looks presentable as well.

CLEANING

Something that seems to cause an awful lot of hard work with Discus keeping is tank cleaning. I have seen an incredible amount of money wasted on various weird and wonderful pieces of equipment over the years, but about 10 years ago I made myself a cleaning tube, which I still have to this day, and it cost pence rather than pounds.

It is simply a piece of 15ml green rigid plastic tube which should be immersed in boiling water for a few seconds so that it softens, then one end is squashed so that it makes a splayed end. The other end is inserted into a piece of hosepipe which has also been softened and slipped over the rigid tube; this makes an excellent syphon/cleaning tube.

SPAWNING POTS

Spawning pots are essential in a breeding tank, but they certainly do not have to be the one-shaped variety. I find a substitute which works equally well as normal flower pots made of Terracotta, turned upside down, and then again the marbles come in useful. You can silicon seal a small marble into the drain hole which stops any fish waste or uneaten food going into the hole and hiding.

WHITEWORM CULTURES

I am always being asked about culturing whiteworm and as it is extremely simple to do I will explain very briefly how to do it.

A wooden box with a close-fitting lid is essential. The box is filled two-thirds full with sedge peat and a little sharp sand, and kept slightly on the moist side. On top of the peat you should place a piece of glass, and on top of this should go the lid. All that is required for a constant supply of whiteworms is to purchase a culture, which you see advertised in this magazine.

Introduce the culture onto the surface of the peat, make a few indentations in the peat, and fill with a mixture of Ready Brek and water, replacing this as necessary. Within a few weeks you will have a constant supply of whiteworms, the secret is not to keep them in extremes of temperatures, ie, not too hot, not too cold.

WATER

If you live in an area where the water is not ideal

for Discus keeping there is absolutely nothing wrong in using rainwater, as long as you bear a few things in mind. The first thing is that it should ideally be stored in a plastic water butt, and secondly, you should make sure that it is coming from a roof that is clean, and free of things such as bird-droppings, etc.

Another pitfall that should be avoided is that if you live next door to a plant that is disposing of toxic waste, etc, you will have to give it a miss. If you are in an industrial area it may also be unwise; if, however, you live in an area which is fairly rural and the farmers are not spraying their fields in the vicinity, the rainwater should be fine, as long as it is aerated and filtered through good quality carbon for 24 hours or so. I bred Discus in rainwater for 10 years and experienced no problems whatsoever.

FOOD

With regard to collecting live food for your fish, a golden rule to remember is that as long as it comes from water that does not contain other fish, or sewage, it should be safe. Having said that, I restrict my live food gathering to Earthworms which, in my view, cannot be beaten. I also culture mosquito larvae in the summer. This can be done very easily by filling a few plastic buckets with water, and in each bucket put a handful of nettles; in a very few days the buckets will be swarming with mosquito larvae. It is advisable, however, not to keep the buckets too near the house as they begin to emit a bit of an odour (this is an

understatement) after a few days!

WATER QUALITY

One thing regarding water quality that a number of Discus keepers seem to have difficulty with is keeping the pH stable. The reason for a pH crash is usually that the water in question has little or no Carbonate Hardness (KH). Very briefly, if the water is buffered first with bicarbonate of soda and then made more acidic it will be found that it will remain considerably more stable.

There are, of course, many different short-cuts and money saving ways of doing things, these are just a few of mine. I would be very interested in hearing some of your tips if you are prepared to share them with us. If you are, please write and tell me c/o *Aquarist and Pondkeeper*.

Next month I shall be on to my very favourite form of Discus keeping — the keeping of Wild Discus. As this is an area that is becoming more and more popular I will explain fully how to achieve this. It is really no more difficult than keeping the domesticated varieties, as long as you understand the differing needs of the wild fish.

In fact, it is quite possible to keep wild and domesticated Discus in the same aquarium as long as you remember that domesticated fish will adapt to the conditions that a wild Discus needs, but a wild Discus will not do well unless its conditions are near perfect. I will explain in much more detail next month.

I will also explain some of the various forms of wild fish and how they are caught and shipped from South America to Europe, and why correct quarantine procedures are so important.

Happy Christmas to readers everywhere!

The British Aquarists Festival was an ideal opportunity for increasing public awareness about DISKUSIN, a Freeze-Dried Wholefood which is distributed by B.D. FOODS throughout the UK.

Mr Bryan Hoyle of BD Foods explained that having a Trade Stand at the BAF enabled me to answer any questions and discuss in detail with members of the public the benefits of feeding DISKUSIN, which is suitable for all Tropical, Marine and in particular Discus Fish, and in his opinion is probably one of the best all-round foods available on the English market today.

DISKUSIN is rapidly becoming accepted as a superb quality food by Britain's Discus keepers and breeders, as well as being widely used by the general community tank fishkeepers.

DISKUSIN is manufactured in Germany from selected natural raw materials under high-vacuum conditions, in which all valuable ingredients and nutrients remain fully effective. It is guaranteed NOT to

The BAF was a tremendous success for DISKUSIN and I would like to thank everyone involved for all their hard work and organisation, including Mr Arnie Chadwick and his team, but, most of all, the public themselves for giving their support to such an eventful weekend. I am sure an enjoyable time was had by all and I for one look forward to next year's event.

contain any preservatives, colourings or hormone additives, and offers the aquarist a clean and easy method of feeding in various ways. DISKUSIN may be used as an Adhesive Food,

pressing it inside the aquarium against the wall of glass, enabling the aquarist to watch and check the quantity consumed. It may also be broken up by the aquarist and used as a Floating

Food, or even ground into a fine powder, which has proved to be an ideal growth aiding food for rearing baby fish. As quite a lot of Discus keepers tend to blend their own food in these cases DISKUSIN is a valuable additive and conditioning food for adult Discus.

Should your fish need to be treated with medicines or vitamins at any time it is possible to administer these via

DISKUSIN, the advantage being that the water of the aquarium nor the filter or plants are exposed to the medicines.

Britain's largest breeder and supplier of home-bred Discus,

S. & D. Punchard, use and highly recommend Diskusin, as can be seen on their video out now.

DISKUSIN can be obtained from good aquarist shops, or, in case of difficulty, direct from: BD FOODS, 30 Hanover Street, Bolton Brow, Sowerby Bridge, HX6 2BP. Tel/Fax: 01422 834929. Price £4.95 inc p+p. Cheques payable to 'BD FOODS'. Breeders and Trade Enquiries Most Welcome.



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1. Biological Dry Wholefood for all Tropical, Marine & Discus Fish
2. Made in Germany — Freeze Dried Under High Vacuum so that all nutrients remain fully effective
3. Made Exclusively from Natural Raw Materials
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5. Offered in Unique Form — One Piece 100ml Plate
6. Easy to Feed, Handle and Store
7. Economical in Consumption
8. Optimal Rearing Food for Young Fish
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Also recommended by A&P Discus Correspondent.

Available from all good aquarist shops, or in case of difficulty direct from the Distributor:
B.D. FOODS, 30 Hanover Street, Sowerby Bridge, HX6 2BP. Tel/Fax: 01422 834929

BREEDERS + TRADE ENQUIRIES WELCOME

TECHNICALITIES for beginners

Peter Moon
comes up with some
FOOD FOR THOUGHT

This month's article looks at the types and varieties of fish food available to today's hobbyist, also we take a look at how various types of food are manufactured.

A trip to your local aquatic outlet is largely a pleasant one, but selecting food for your fish can be a daunting affair, there are so many varieties and types available with every manufacturer's tub or tin proclaiming that theirs is the best on the market!

Foods are divided up into categories: Flake, Pellet, Freeze Dried, Frozen, and Live, simple enough, well not quite. Each category offers the hobbyist alternatives, depending on the fish(es) being kept and their particular nutritional requirements. Let's take a brief look at each category in turn.

Flake

Probably the most common food available. These dry foods are man-made and contain ingredients designed to meet your fishes' nutritional requirements. They are available in various size tubs/pots and suited to a wide range of fish species, from the humble Goldfish to the exotic Marine fish.

Pellet — granular

Again very popular with different size pellets available for

different sized fish, highly nutritional, with 'sinking varieties' to stimulate feeding and for bottom-dwelling species.

Freeze dried

Normally cubed shaped with the emphasis of being able to 'stick' the cube to the side of the aquarium glass enabling the fish to nibble, again highly nutritional.

Frozen

Specially prepared live food frozen into blocks or cubes, some are irradiated to remove any natural undesirable contaminants, naturally highly nutritional. Needs to be stored in a freezer (thaw before use). Infinite varieties available.

Live

Daphnia (Water Fleas), Brine Shrimp (Artemia), Tubifex worms, etc. are available from all good aquatic outlets and act as a nice treat for your fish, although some species (Seahorses) will only eat live food — a point worth considering with any potential fish purchase.

All of the varieties of foods listed above have one thing in common, they all contain a high degree of nutrition, some being manufactured and others being natural. Let's now take a look at the manufacturing and processing elements.

Manufacture

A great deal of research goes into producing a fish food that will provide all the necessary ingredients for growth, colour and vitality. Every form of these ingredients are tested in laboratory-style conditions for performance and freshness, so

that you the hobbyist obtains a quality product. All of these foods must contain a balance of proteins, fat, vitamins, carbohydrates and minerals, this is vital otherwise deficiencies will occur.

Flake food ingredients are first mixed together then turned into a liquid form that is then sprayed as a thin coating onto heated rollers; as the rollers turn the food is either sliced off the rollers or falls into a crunching machine and made into flakes. It is then stored in air-tight silos before packaging into tubs, etc.

Granular and tablet style foods are prepared on an extrusion basis, or moulds, to produce the shapes, again storage in an air-tight silo holds in the freshness before packaging.

Freeze-dried food is first frozen into blocks of water, then placed in a vacuum oven, which thaws the blocks and seals in the freshness.

Frozen food packs are available flat, or in blister packs; basically the food (which was originally alive) is deep-frozen and, in the case where gamma irradiation is required, transported in insulated cases, so that the product remains deep-frozen to the government-controlled irradiation plant. This kills any pathogens present — completely eliminating any risk of introducing harmful parasites or bacteria to your aquarium. This also ensures freshness on opening, but just as important, it means that these foods can be stored in your own domestic freezer, without fear of contaminating your own food.

My thanks go to: The Tropical Marine Centre, Chorleywood, and John Allan Aquariums, Bury St Edmunds, for their help in preparing this article.

NOTE: In the November TFB we wanted to acknowledge the source of the illustrations. They come from the Green Turtle publication, 'The Marine Aquarist Reference', by Martin May.



AQUATIC
INSTALLATION & SUPPLIES
Tropical Fish from 1st November
We are suppliers of the following: Nishikai Foods & Treatments, Interpet, Waterlife Research, Algarde, Blagdon, PVC hoses & fittings, Pond Liners, Bottom Drains, UV Sterilisers, Filtration Units, Pumps from 90 GPH to 4500 GPH.
Also we supply and install shop and garden centre units.
Wholesale Catalogue available
Trade Only
We are now at our new premises at
**NELSON STREET, HYDE PARK,
DONCASTER**
Tel: (01302) 739800
Fax: (01302) 739888

.. News Desk ... News Desk ..

Blackpool Tower Aquarium is computerised

By Dr David Ford, Aquarian Advisory Service



Tower World and the Aquarium built into the base of the Tower. The aquarium has a permanent display by Aquarian Fish Foods as well as dozens of tanks of freshwater and seawater aquaria.

30,000 gallons of seawater are filtered every hour in the Blackpool Tower Aquarium's display of native marines. The stocking level has always been low because only one sand filter was used and this could not cope with any ammonia or nitrite crisis. Stocking levels are now being increased because a brand new filter system by Intensive Aquaculture Technologies Ltd has been installed.

IAT are a British company based in Hull. They install filtration systems for aquaculture units around the world and specialise in Zoo Aquaria. IAT worked on the

new National Aquarium in Barcelona and are currently building systems in London Docks and Taiwan.

The system in Blackpool Tower has a pressurised sand filter, three UV units and ozone injection fractionator (a large protein skimmer). To monitor the ozone required the redox potential is measured in digital form. This means the digits can be fed into a computer and its memory. Hence the control unit has a learning feature, the amount of ozone being continuously adjusted to the perfect level whatever the time of day or night.

Mazda Trucks support the Sandelia Project

Recent captive breeding attempts at the Albany Museum, Grahamstown have shown male Kowie River East Cape Rockys, *S. boisii*, turn an intense black with a white bar on their caudal, dorsal and anal fins. Sometimes they engulf the entire head of the female and give her a shake during courtship.

Surveys for *S. boisii* in the Nahoon were not successful but in the Buffalo River small populations of the distinctly yellow Rockies were found near the beautiful Amacola forests. Unfortunately, there was evidence of recent felling of forest trees and there were abundant goats so there is no chance for regrowth.

But the good news is that Mazda Trucks have generously contributed a 4WD truck to the project to help in survey work and maintaining reserves.

DAVID ARMITAGE

Interpet introduces new child safety measure

Interpet — the UK's leading pet and aquatic products specialist — has introduced a new child safety measure through the incorporation of child-resistant closures on the caps of all aquarium treatments.

This latest measure follows the recent introduction of child-resistant closures on all pond treatments and is part of a considerable investment in new state-of-the-art, computer controlled production equipment.

As suppliers of over a million treatments each year Interpet is keen to lead the field in making its products as safe for consumers and their families as they are for fish and the aquarium environment.

Interpet brand manager, Adrian Exell, said: "Although there are no existing legal requirements making the use of child-resistant closures

mandatory, we have decided to introduce the new closures on our aquarium products.

"We believe the consumer will welcome this additional safety measure which significantly reduces the risk of unauthorised use by young members of the household."

Issued by Interpet and RTA PR

Darenth Discus

Readers may have heard the sad news that Barry Stone passed away earlier this year. We have been asked by Hazel Stone to include the following for the information of all Barry's customers and friends.

My husband's passion for Discus fish and the well-being of their health was widespread, together with his attempts to try and source parts to bring Reverse Osmosis Units within everybody's reach, so that people in poor water quality areas may be able to keep the Discus fish in good health.

As the wife of a most wonderful husband I came to love the Discus also and found great pleasure in the achievement of breeding them.

May I please say that I am still breeding Discus and doing water changes to some 1,400 gallons of tanks that are spread throughout our home. I would like to inform people who are under the impression that we are no longer trading that I have been, and will continue to breed and supply both fish and Reverse Osmosis Units. Thank You.

In-store vet's surgery

At the recently-opened Walsall, West Midlands branch, one of five new Pets at Home Stores, you'll find something extra — a fully-equipped Vet's Surgery, Companion Care, run by Pete Eville and Rob Jones with even a 24 hour call-out facility.

The Pets at Home superstore branches now number 27 with another 12 coming along in the next 12 months. The clean and

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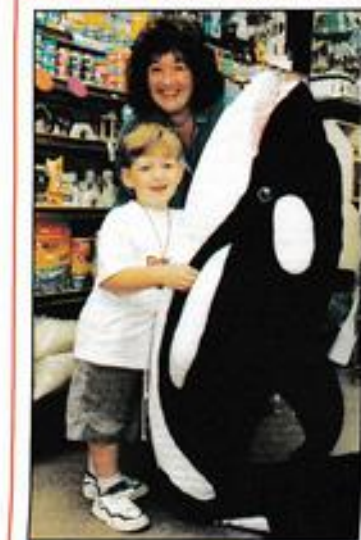
well laid out stores, 'all under one roof', customer-friendly service plus all the pet requisites you (or your pet) could ask for are easy to find — they even welcome your pet, too.

For more information contact Tracy James, Harrison Cowley, Manchester International Office Centre, Soyal Road, Manchester M22 5WB. Tel: 0161-437 4474. Fax: 0161-437 6029.

Cyprio's new man



The External Relations Manager at Cyprio will need no introduction to aquarists for he is Nick Fletcher, former Deputy Editor of *Practical Fishkeeping* magazine. Nick's responsibility will be further promoting the company's public profile at home



6ft whale raises money for charity

Ponderosa Pets, based in Cheltenham, put the 6ft whale they won at the Pet Index Exhibition to very good use — it featured as a raffle prize to raise money for charity.

"One of our main suppliers, Tetra, held a draw to win this giant cuddly whale," says Julie Wood, the shop owner. "Our ticket came out and I thought it would make an excellent raffle prize and so it proved." Around 400 tickets were sold raising £50 that will be going to the Battledown Children's Ward at the local Hospital and Julie has some more projects in the pipeline.

Jamie Kirk (aged four) was the very happy recipient of a new furry friend, which is considerably bigger than he is!

"I have always found Tetra to be extremely co-operative and promotions such as these do help to create a lot of interest," commented Julie.

Julie Wood with Jamie Kirk, aged four, and 6ft cuddly friend.

and worldwide, developing and delivering training and information programmes for Cyprio's trade customers whilst at the same time handling advertising accounts and product packaging.

Nick says that this is a new slant on a familiar theme for him but he's not unfamiliar with the end-user of Cyprio products — the fish!

Nick can be contacted at: Cyprio Ltd, Hards Road, Froggall, Peterborough PE6 8RR. Tel: 01778 344502. Fax: 01778 348093.

Big Koi arrives

On November 19 1996 Norwood Fisheries, at Killmarsh just south of Sheffield, will take delivery of the longest Koi ever to be imported into the UK — a monster 42in (1.07m) Chagoi.

Although Magoi approaching 1m in length have occasionally been imported, Magoi are NOT Koi.

Chagoi are true Koi and, although they are famous for growing, 42in is exceptional by

any standard. This particular Koi is not just enormous but it is also of exceptional quality.

Norwood is located just two miles from M1 Junction 31; take the A57 signed for the Rother Valley Country Park, turn left on to the A618 and Norwood is a mile or so on the left after the petrol station.

Information provided by Nishikigi International Ltd, Halton House, Rosedale Avenue, Lawton, Warrington, Cheshire WA3 2RW. Tel: 01942 726864. Fax: 01942 723914.

School adopts nine whales

The staff of All Pets in Stonehouse has helped Park Infants School adopt no fewer than nine whales in a promotion organised by one of their main suppliers, Tetra.

Mrs Hope, the Nursery Nurse Teacher in the school, was approached with ideas about how the scheme could work and her whole hearted backing ensured the project would be a success.

For every 30 foils collected from certain special promotional tubs, a whale adoption is organised through the Whale and Dolphin Conservation Society. Angela Watson has been instrumental in collecting the foils from her customers in order to adopt a whale for her local school. "If we can encourage children to think along conservation lines it must be good for the future. I spoke to the teachers about the project and offered to collect the foils on their behalf. We also had a print framed and put in the school and took in books for the children to look at. It certainly captured their imagination and the response has been fantastic."

A competition was also set asking children to paint a picture of a whale in its own environment and over 250 paintings were received. "I shall display some of the winners in the shop, but really all those who took part are to be congratulated," commented Angela.

Nine whale adoptions seems to be the most so far. Unless of course you know better!

Press enquiries to: Steve Bendell, Aylesworth Fleming Public Relations, Poole Hill, Bournemouth Tel: 01202 295723.



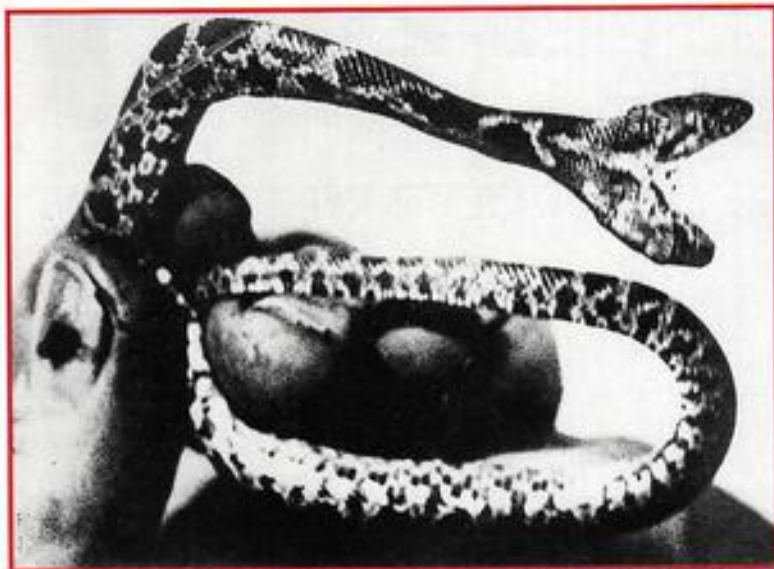
Ever seen a two-headed snake? The *Notrix*, or Grass-snake group, seem to be more prone that way than others. Professor Yehuda Werner, Professor of Zoology and Curator of Herpetology at Jerusalem University, writes asking me to give their Museum one I obtained from Transjordan because that September's issue of the *American Herpetological Review* doesn't include it in a paper on Dicephalic Snakes in Museums.

This is a yearling *Notrix tessellata*, the Europe and Asia Minor Tessellated Water-snake, closely-related to our British Grass Snake. This is a real 'monster', or freak, unlike the unqualified imaginations and illusions from Loch Ness! It probably never fed, though an X-ray shows two perfect (and separate) skulls and necks, complete with eyes and mouths.

I obtained it in 1945 when Secretary of the Jerusalem Naturalists' Club. An Arab found it in the Transjordan Desert. As noted in the Club Bulletin, it was about a year old and about ten inches long, compared to the adult's size of about 36 inches. It was named from the mosaic-like pattern of its scales. It inhabits lakes and ponds where I've seen it swimming by lateral twists of its body, its head raised above

X-ray of a two-headed young Water-snake, *Notrix tessellata*, from the Jordan Valley, in the author's collection. A yearling, it apparently never fed.

PHOTO: ERIC HARDY



The heat of eggs would always reach over 100°F in Jordan; however, two-headed snakes are so rare that mine is the only known in the area, states the Professor. Over-heating alone, therefore, does not explain it.

The phenomenon has been found in the North American Western Diamond-backed Rattlesnake: a specimen in the Miami Serpentarium ate six Goldfish at a time! A two-headed American Water Snake, *Notrix spjeden*, was born dead. So this congenital malformation is not so much rare in snakes as is their survival.

How often do you see common British lizards swimming? A friend visiting the ponds at Arne Reserve in Dorset for their Dragonflies saw what at first he thought was a snake swimming. When it came nearer, and he saw its legs, he thought it was a newt. But it crawled out, its scales became visible and he recognised it — a Common Lizard.

Aquatic habits are by no means unknown in lizards. The

NATURALIST'S NOTEBOOK

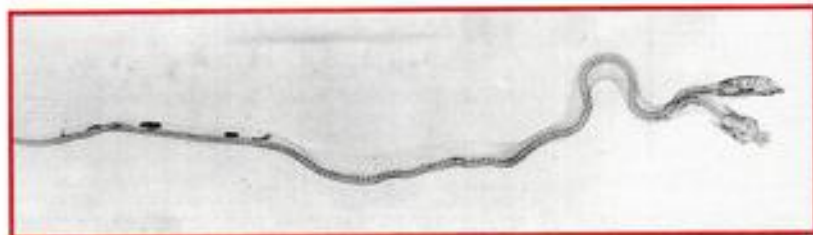
By
Eric Hardy

the surface to hunt frogs, tadpoles or fish; it spreads out its ribs and flattens its body into a rowing plate. My specimen had a thin ridge or keel down its back.

Its lung acts as a hydrostatic apparatus: when filled with air the snake rises to the surface; after expiration it sinks to the bottom.

Two-headed Grass-snakes are the most frequented in British snakes, but there was a two-

headed Adder in Cornwall. Double-heading is said to be caused by interference occurring with the developing embryo due to varying temperature when Grass-snakes lay their eggs in manure heaps. But the Tessellated Water-snake has no manure heaps to go to in the Jordan Valley — only camel dung along the Bedouin trails. One per cent of eggs hatched in manure heaps reaching 100°F or more are said to be dicephalic.



Basilisk Lizard supports its body weight on the water surface whilst hunting; the Chinese Water Dragon, *Physignathus*, is a lizard recently bred in captivity at California University. The Tegu Lizard, *Tupinombus*, is an aquatic species from Brazil. But where I live, near a famous haunt of Common and Sand Lizards, they are rarely found in the numerous water-slacks. Elsewhere, Grass-snakes are often in water; the Adder occasionally crosses water.

At McGill University, Debraga recently studied anatomical and functional changes between terrestrial varanoid lizards and aquatic mosasaurs.

Two-headed Water-snake, captured on farm in West Virginia, USA, and sent to Cincinnati Zoo.

PHOTO: ERIC HARDY

Aquarist honoured at the Scottish International Fish Show

Dougie Carr is a hobbyist fish breeder who was a founder member of the Greenock Aquarist Society in 1950. Forty six years later he is still an active member of the Scottish Club, so when Greenock was chosen to host the 1996 Scottish Championship and FSAS Open Show the prize-giving included a special plaque to commemorate his long service.

It was presented by Dr David Ford of Aquarian, who attended the Show and gave a talk on Ornamental Fish Nutrition.

The Scottish Supreme Champion for 1996 is a South American Catfish, *Tattia oulygta*, owned by Allan James of Greenock A.S. Alan is a Class 'B' FSAS Judge and he won the same



award in 1995 with a January Tetra, *Hemigrammus lyonsi*.

Greenock A.S. set-up over 20 furnished aquaria for the Scottish International Show — it was held at Greenock High School, Spango Valley on October 19/20 1996. From local marines to Rift

Valley Cichlids, from Amazonian Rainforests to the new 'Reflecto' tanks with mirrored backgrounds, the Show was very different to the traditional tableaux styles seen in England.

CONTINUED OVERLEAF

IN MEMORIAM

As we went to press we received two very sad pieces of news concerning aquarists both well known within their own areas and also much further afield.

Colin Rumbold, of the Isle of Wight A.S., tragically passed away suddenly from a heart attack. Colin was a very active member of his Society particularly with the organisation of such events as the annual 'Grocklemania' which was a popular event with visiting aquarists joining in the fun from many parts of the mainland. One of Colin's main claims to fame was his instigation of the 'Thomas Crapper Award', the trophy awarded to the Society most successful in the 'Team Games' forming part of Grocklemania. Away from the island, Colin fully supported his Society as they travelled to other Shows and built up a wide circle of friends, particularly at the British Aquarists Festival in Manchester, who were devastated to learn of his passing. Only last year Colin was also in our thoughts when his wife passed away.

Another recent loss to the hobby was the passing, after a brief and suddenly diagnosed illness, of Tommy Duke, of Clyde & District A.S. Tommy was another one of those hobbyists whose reputation seemed to precede him and you seemed to bump into him at the most unexpected places. To say Tommy was determined was an understatement — particularly if you had previously promised him something — again he would suddenly bob up and remind you of it! Again Tommy travelled widely in following his aquatic interests, often venturing south into Northern England and was once seen as far south as the Alexandra Palace Show in London. Yet again the hobby has lost one of its 'characters' and our condolences go out to his wife Ann.

Weston double for Alan and joy for John



Alan Stevens, winner of Interpet Fishkeeping Challenge.

PHOTO: A&P LIBRARY

British Aquarists Festival Aquarian Aquachamp Alan Stevens, from Eastleigh A.S., chalked up an amazing 'double' by winning the Interpet Fishkeeping Challenge at the FBAS Supreme Festival of Fishkeeping at Weston-super-Mare.

After qualifying for the head-to-head Final round from the Semi-Final written 'exam' he managed to beat David Marshall from Ryedale A.S. by 26 points to 21. Alan proved that perseverance eventually pays off as he had been a Finalist in three Aquarian Aquachamp contests before the Weston triumph.

However, there was no such repetitious luck for Dave MacAllister whose Champion of Champion Xiphophorus birchmani was unplaced in the Supreme Championship. The 1996 FBAS Supreme Champion was a *Herichthys regani* owned by John Egan of Port Talbot A.S. making a splendid weekend for Wales as little Robert O'Grady took most of the Awards at the Junior Open Show as well.

Major Winners (full report in next month's A&P)
 FBAS Supreme Championship — 1st *Herichthys regani* 84 points — John Egan; 2nd *Synodontis frentosa* 83 points — Len Hughes; 3rd *Barbus miolepis* 82 points — Terry Hewitt; 4th *Lamprologus 'doffodi'* 81 points — Jon Hill; 5th *Lamprologus calvus* 80 points — John Powell; 6th *Lamprologus calvus* 79 points — Chris Bramble
 Best in Hagen Masters Open Show — *Corihubbisia stuarti* — K. Myers
 Interpet Fishkeeping Challenge — 1st Alan Stevens; 2nd David Marshall
 Interpet Society Challenge — Portsmouth A.S.
 Best Trade Stand — Anglo Aquarium Plant Company

Tetra COMPETITION

All I want for Christmas is ...

Thinking of unusual and useful Christmas presents is never an easy task, but this year we can help you get away from giving socks and hankies because membership of the Tetra Club will make a superb Christmas present for fish lovers of all ages. Costing just £10 to cover a once only joining fee and a year's membership you'll receive a personal membership card and number to gain discounts on subscriptions, admission fees and the cost of Tetra products. Tetra's Advice Line is there to help with any problems or questions you may have and admission to Talking Fish Seminars is free to Club Members. Regular special offers can be found in the exclusive Tetra Club News — a high-quality, full-colour magazine filled with features and news.

Take advantage of this great gift idea and Tetra will send



new members a welcome pack of their choice for tropical, pond or cold water fish.

Write to: Tetra Club, FREEPOST, 504835, Eastleigh, SO53 3JW for an application form and make a fish lover's Christmas last all

year.


For those readers with ponds, TetraPond Wheatgerm Sticks is a particularly effective food for your fish during these cold months, and, while you're feeding them in the winter, we have just the

way to keep you warm too. Five readers of *Aquarist* and *Pondkeeper* can win an exclusive Tetra Club Sweatshirt (retail value £18 each) by solving the following seasonal anagrams.

Just put your answers on a postcard or the back of a sealed down envelope, add your own name and address and send to: Dept SW, Tetra Competition, PO Box 2162, Bournemouth BH2 5ZA, to arrive no later than 10 January 1997 when the draw will take place. Please state if you would like Small, Medium, Large or Extra Large should your name come out of the hat.

1. SLIM TOTEE
2. NEW SEMI
3. SPIN MICEE
4. TEN REPS
5. CHADS NIP SMUG DIRT

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The best value money can buy. This magazine is suitable for all fishkeeping

Hobbyists whether they have the smallest Aquarium or the largest Pond. Articles include: Caring for your fish, Lighting, Water Quality, Plants, Solving Aquatic problems, Filtration and many other interesting items.

Also includes: Society News PUBLISHED QUARTERLY Become a subscriber now at the special rate of £5.00 (including postage & packing) Overseas subscribers £15 (inc postage & packing). For FOUR editions, starting with the next issue.

CONTINUED FROM PREVIOUS PAGE

Inverclyde Provost Cathie Allan performed the opening ceremony on the Saturday morning by cutting a tape and by prize-giving on the Sunday evening 40 aquarists had entered 250 fish, with 17 entries to the Scottish Supreme.

David Ford of Aquarian presenting Dougie Carr with a plaque to commemorate his long service as founder member of Greenock Aquarist Society.

PHOTO: DAVID FORD



DIARY DATES

DECEMBER

- 3 Gloucestershire A.S.**
Monthly meeting, Bell & Gavel, Cattle Market, St Oswalds Road, Gloucester. Open Forum and Quiz. Contact Andy 01452 372948 or Christina 01242 520428.
- 7 FBAS Annual General Meeting**, 2pm. YMCA, Errol Street, London. NEW VENUE.

- 14 Eastbourne Pondkeepers Club**, Buffet Dance, Hampden Park Community Centre, Eastbourne. Tickets £4 from Charles Smith 01323 729385. Club Meetings last Wednesday of each month at the Lamb Inn, High Street, Old Town, Eastbourne. Contact Brian 01323 731369
- 20 Gloucestershire A.S.**
Christmas Party, Photo Competition and Christmas Raffle. Contact Andy 01452 372948 or Christina 01242 520428.