

The NEW

# AQUARIST & PONDKEEPER

MARCH 1996

£2.25

The Better Fishkeeping Magazine

## INSIDE

**WIN A WEEKEND  
FOR 2 AT  
GROCKLEMANIA '96**

**Food Offers from  
AQUARIAN • OMEGA**

**TETRA & OASE  
COMPETITIONS**

**HALF PRICE  
CD ROMS +  
BOOK OFFER**

**FREE SUPPLEMENT  
WAKE UP TO SPRING**



# Contents

MARCH 1996 VOL 60 NO 12

## AQUARIST PONDKEEPER

EDITOR  
Dick Mills

ADVERTISEMENTS  
MANAGER  
John Young  
Tel: 0181 904 8886

PRODUCTION DIRECTOR  
Jeffery Swaffer

PUBLISHED BY  
MJ Publications Limited,  
Caxton House,  
Wellesley Road,  
Ashford, Kent TN24 8ET

TELEPHONE:  
SUBSCRIPTIONS/  
ADVERTISING AND  
PRODUCTION/  
CLASSIFIEDS &  
BUYERS GUIDE/  
ACCOUNTS  
01233 636349

FAX NUMBER  
01233 631239

SUBSCRIPTIONS  
Rates on application.  
All subscriptions payable  
in advance to:  
MJ Publications Limited,  
Caxton House,  
Wellesley Road,  
Ashford, Kent  
TN24 8ET

Litho origination by  
Ashford Composition Ltd.,  
Ashford, Kent  
Repro by Abacus Colour  
Reproduction, Ashford, Kent  
Printed by Headley Brothers  
Limited, Ashford, Kent

Distributed to the  
Newstrade by:  
LIMD Ltd., Tabernacle Street,  
London EC2A 4BN

ISSN 0003-7273

Opinions expressed in any  
article remain those of the  
author and are not necessarily  
endorsed by the Editor nor by  
MJ Publications Ltd.

Correspondence requiring  
response or return of any  
material supplied must be  
accompanied by a stamped  
addressed envelope.

## Features

### 6 DOWNFLOW LIVESTOCK:

Nick Dakin advises on early  
occupants for the newly set-up  
marine system

### 10 DEVILS WITH A TOUCH OF GOLD:

Martin Chandler ends his series  
with breeding even more Devils



### 22 BACK TO BASICS – THICK-LIPPED GOURAMI:

Iggy Tavares takes on an old  
favourite



### 27 STARTING WITH DISCUS – THE SEQUEL:

It's time to introduce the fish!  
Brian Middleton tells all



## FREE PULL-OUT SUPPLEMENT



## Wake up to Spring

SEE PAGE 43

## 92 UNDERCURRENTS OF POWER:

Get a charge from your fish — literally! Roy Osmint puts on his rubber gloves to handle the electrifiers



## COVER PICTURES



MAIN PICTURE: KEITH LAMBERT  
INSET PICTURE: IGGY TAVARES

They say a picture is worth a thousand words, so how can any suitable description of that glorious pond possibly fit into such a tiny space as this? All of you will be able to describe the feelings that the picture inspires, suffice therefore to say that it's the start of something wonderful in the water garden again.



Oh, by the way, the fish is a Thick-lipped Gourami, *Colisa labiosa* — just making the point that it's not just all pond-related topics this month!

## Regulars

Growing Tips/A-Z of Plants	8
<i>Barry James looks at CO<sub>2</sub> and new ways of beating algae naturally</i>	
Coldwater Jottings	19
<i>Frozen bell fountains, Californian fish, spring cleaning and a Philadelphia Koi Show — Stephen J. Smith covers the globe!</i>	
Sea View	31
<i>Gordon Kay keeps up with conservation matters, sea cows, false eyes and a colour-changing Sea Perch</i>	
Reviews	32
<i>Read it, watch it or play it — books and computer programmes for your information and entertainment</i>	
Buy Lines	34
<i>Barry James updates the equipment market</i>	
Koi Calendar	38
<i>David Twigg keeps a log on all aspects of his pond, and a microscopic eye out for parasites</i>	
Shore Watch	40
<i>With one eye on the tide, Andy Horton uncovers more shoreline subjects</i>	
Cichlid Secret	41
<i>Mary Bailey exposes a mud-loving species</i>	
Jackie's Juniors	75
<i>Fun and games and a prizewinning idea from the youngsters</i>	

Frogs & Friends	76
<i>Bob &amp; Val Davies look at newts, snake skin shedding but draw the line at toad wine!</i>	
News Desk	78
<i>Supersleuth Stephen J. Smith noses out the latest news</i>	
Tomorrow's Aquarist	82
<i>Gina Sandford explains all about mops</i>	
You Write	90
<i>Have your say, and you could win a prize or a repost — who knows</i>	
Pond Diary	96
<i>Susan Stephenson continues the year-round story of the pond</i>	
Technicalities for Beginners	102
<i>Making aquarium a regular chore is no bad thing according to Peter Moon</i>	
It Seems To Me	105
<i>Andrew Werendel's look at pumps</i>	
Society World	113
<i>Shows, events and news from aquatic societies countrywide</i>	
<b>PLUS:</b> Coldwater, Marine and Koi Q&A's	
<b>COMPETITIONS!</b> Win with Tetra, Cloie and Crocklemania	
<b>OFFERS!</b> Aquarian and Omega are giving away books, Ringress makes getting Gordon Kay's book easy, and half-price CD-Roms	
<b>A&amp;P GIVES DOUBLE SERVICE TO READERS AND ADVERTISERS!</b> — Readers: Our display advertisers always gives you the best aquatic merchandising sources but now you can shop for A&P itself here, too. Where you see the A&P logo within each box, you can be sure of obtaining A&P at the same place.	

## Comment

As I write this, I am experiencing an almost schizophrenic state. Outside, the snow is coming down, making it difficult to see across the road, whilst our three cats appear to be superglued to the armchairs next to the radiators; in front of me, the word-processor screen is packed with passages of text describing the attractions of sunlight on a dappled pool, the tinkling of fountains and the pleasures of being pondside once more. Then I look out of the window in disbelief that such times will ever come.

But come they will, and we begin in this issue to greet the preparations for the eventual arrival of spring with our Supplement "WAKE UP TO SPRING" in which there are ideas for ponds, pumps and tire warnings as to what uses a humble lawn-mower grass box might be put!

It seems that the appearance of the new A&P has woken up some attention, too, with very welcome responses to articles via readers' letters and from our friends in the aquatic trade who are as delighted with its reception as we are. I have to admit that, with the first two issues, there was a very steep 'learning curve' for all concerned but once a routine, or rhythm, of production became recognisable then it's just a matter of getting things done — all in time for the next deadline!

Speaking of deadlines, A&P will be appearing at the end of the month prior to the 'cover month' but this departure from the earlier mid-month publication date doesn't mean we have all got a week off each month; it is imperative (for the sake of our readers, show organisers and manufacturers) that we receive your news and views as quickly as you can get them to us. A lot of the preparatory presentation work isn't done at 'Head Office' in Ashford (where your letters arrive) but by our 'away team' of contributors who, surprise, surprise, don't all live in the same locality and thus have to have their material posted out to them. It all takes time, so please help us to help you by advising us of events and new products as early as possible. Now, did I switch on that pond heater ...?

*John Pells*

EDITOR

E-MAIL ADDRESS:  
101372.3451@CompuServe.com

# DOWNFLOW LIVESTOCK

Last month we saw how downflow undergravel filtration made an ideal (but not the only) starting point for the newcomer to marine fishkeeping. It is relatively simple to set up and operate and provides an undemanding system by which the essential skills of marine fishkeeping husbandry can be learned. Such an aquarium will often be forgiving in nature and allow the novice to make a few elementary mistakes with little risk to the animals kept therein. However, livestock must be chosen extremely carefully, paying particular attention to the varying sensitivities of each individual animal.

Experience has proved time and time again that it is vastly beneficial for the novice to start with fish only, gaining those vital water management skills that will be so important in the keeping of much more demanding livestock. To plunge straight into the deep end and attempt to house highly sensitive invertebrates at the outset, more often than not results in dismal failure owing to lack of experience. Therefore, and for our purposes, the first downflow tank will be a fish-only affair and a largely learning experience.

## STOCKING LEVELS

The traditional stocking levels for most types of setup have been long established and work very well. By estimating the fish's length in inches from the tip of the snout to the base of the caudal fin (tail), the numbers can easily be calculated and prepared for in advance. The standard stocking formula has it that for the first six months only, 1 in of fish for every nett gallons may be introduced. During the following six months this can be increased to a maximum of 1 in of fish for every two nett gallons. The rate of stocking must be very slow to enable the biological filter to adjust to each new pressure put upon it without endangering the existing livestock. One fish every three-four

## NICK DAKIN FOLLOWS UP LAST MONTH'S MARINE SYSTEM SET-UP DETAILS WITH SUGGESTIONS OF SUITABLE FISH SPECIES.

• PHOTOGRAPHS BY THE AUTHOR •

weeks would be a good frequency of stocking guide to follow.

## LIGHTING

Fortunately, most fish are very undemanding as far as lighting is concerned (unlike many invertebrates!) and this area of the hobby need not worry the newcomer unduly. A three-foot tank will require two-four fluorescent tubes for viewing and, although varying makes of tube will render the colours of the fish slightly differently, the choice will always have to be a subjective one. The best advice that can be given is to observe the various types of lighting on display at any well-stocked dealer and choose that which appeals to you.

## SEQUENCE OF INTRODUCTION

As we have seen, it is important to introduce fish gradually over a period of time. This does, however, present its own problems as many marine fish are highly territorial animals and resent newcomers to an aquarium that they have already become established within

and laid claim to. With the exception of the Damsel, my choice of fish are largely non-territorial and will accept fresh introductions without too much fuss. Having said that, it would be best to stock them in the following order: The Cardinal Fish, The Lemon Goby, The Banana Wrasse, The Cherub Angel, The Pyjama Wrasse and lastly, The Yellow-Tailed Damsel. The quietest and potentially least aggressive have been introduced first and the most active and aggressive left until the end. As we progress through this series, the sequence of introduction will become progressively more important as the fish temperaments are more pronounced; it will also require the use of a much more defined fish plan.

**NEXT MONTH:**  
UNDERGRAVELS ARE STILL THE SUBJECT, THIS TIME RUN IN THE REVERSE-FLOW MODE. MORE COMPLICATED TO SET UP AND MAINTAIN BUT WITH EXTRA FLEXIBILITY



# A SELECTION OF IDEAL FISH

The following fish were chosen with six important criteria in mind:

1. Compatibility with other fish
2. Disease-resistance, even when water changes are not entirely ideal
3. Ease of feeding
4. Manageable in size
5. Attractiveness
6. Affordability

There are obviously many other fish that might be suitable and it would be impossible to list them all here; however, if they fit the above criteria, there is no reason to exclude them from consideration.

## The Pyjama Wrasse (*Pseudocheilinus hexataenia*)

Size: 2in (wild), 3in (aquarium)

A colourful and beautifully-marked fish that is always busy in search of tiny morsels of food amongst the rockwork. It rarely bothers any other species of fish, excepting its own, and is highly resistant to disease. Strangely enough, this is one of the very few species of fish that tend to grow larger in the aquarium than in the wild. This is an ideal first fish and can be highly recommended to the newcomer.

**FEEDING:** Easy. Will accept marine flake as well as finely-chopped frozen foods of all descriptions.

## The Cardinal Fish (*Sphaerama nematopterus*)

4in (wild), 3in (aquarium)

This highly under-rated fish is a shy plankton feeder that is entirely safe with other non-aggressive species and can be kept in a small shoal. The relatively large eyes are a clue to a nocturnal lifestyle in the wild, although behaviour in the aquarium is soon adapted to the hours of daylight. Whilst this could not be said to be the most active of species, it is interesting and resistant to disease. A marvellous choice for the newcomer.

**FEEDING:** Some care is required as Cardinals will only take food suspended in, or falling through, the water column. Frozen brine shrimp and other finely-chopped marine fare can be offered. Flake foods are usually ignored or rejected.

## The Lemon Goby (*Gobiodon citrinus*)

1.25in (wild and aquarium)

This fascinating fish spends most of its time resting on suitable perching sites, watching the world go by. Being totally placid, it can be kept with other peaceful species quite successfully. Choose the highly-coloured specimens that are bright yellow with neon blue markings. Once again, these are disease resistant fish and may be unconditionally recommended for a first aquarium.

**FEEDING:** Easy. Once acclimatised to aquarium life (which does not take long) the Lemon Goby will greedily accept all types of marine fare that it can comfortably swallow.

The Lemon Goby (*Gobiodon citrinus*).

## The Banana Wrasse (*Halichoeres chrysus* and *H. trispilus*)

4in (wild), 3in (aquarium)

Banana Wrasse is a common name shared by two closely-related species, although *H. chrysus* is a native of the Western Pacific whilst *H. trispilus* is located some distance away in the Indian Ocean. The main difference between the two species is that the former (*H. chrysus*) is almost entirely egg-yellow (developing green marking around the face with maturity), whereas *H. trispilus* is a lighter banana yellow with a white belly. Whatever the difference in markings, these fish are easy to look after and very peaceful towards other tankmates.

**FEEDING:** Easy. All marine fare of a suitable size is greedily taken.

## The Cherub Angel (*Centropyge argi*)

3in (wild and aquarium)

Dwarf Angels are very active fish, constantly searching the rockwork for food overlooked by other species. The Cherub Angel is probably the least sensitive of all the dwarf Angels and therefore makes an ideal introductory species. Some imported individuals can be very tatty in appearance and rather washed out in colour; always pick those specimens in good condition and deep blue colouration.

**FEEDING:** Easy. Most marine fare of a suitable size is readily accepted, including flake.

## The Yellow-Tailed Damsel (*Chromis xanthurus*)

4in (wild), 2in (aquarium)



The Yellow-Tailed Damsel (*Chromis xanthurus*).

Owing to their solid constitution, Damsels have become very popular and somewhat abused fish. They are, however, generally aggressive and not all species can be recommended. The Yellow-tailed Damsel is not as aggressive as some of its cousins and often settles into a reasonably peaceful co-existence within the aquarium. Being brightly coloured, small, easy to feed, disease-resistant and cheap to buy, this species makes a very good choice for the newcomer to marines. Although many are often seen sharing one tank in a dealer display, the aquarist is advised to keep only one specimen to avoid any unnecessary aggressiveness that might occur when kept in a long-term aquarium display.

**FEEDING:** Very easy. Will accept any marine fare of suitable size!



# Growing Tips

BY BARRY R JAMES

Devotees of planted aquaria will no doubt be interested in the new 'state of the art' equipment from Dennerle. Whether or not they can afford it is a different matter.

Automatic pH control by the controlled use of carbon dioxide will be of interest not only to those whose principal interest is in plant growth, but also to fish keepers such as the Discus fraternity where maintaining a constantly low pH is essential. The core of the new system is the digital controller. This piece of electronic gadgetry has a digital display indicating the pH reading. The information regarding the electrical conductivity of the aquarium water is conveyed to the controller by an electronic probe. If the reading is higher than desired, the controller sends an impulse to a magnetic valve connected to the CO<sub>2</sub> source. This valve then opens sending a stream of the gas into the tank. CO<sub>2</sub> combines with the water to produce carbonic acid which depresses the pH. As soon as the previously designated pH

level is attained, another impulse is sent closing the valve and stopping the flow of gas. This obviously the ultimate in pH control but it doesn't come cheap. The Digital controller sells in the U.K. for around £250. A complete CO<sub>2</sub> delivery system including the magnetic valve will cost between £100 and £270 depending on the size of the aquarium to be serviced.

For those interested in low-voltage systems, Dennerle manufacture 24 volt cable heaters, thermostats and submersible filters. The cable heaters are inserted under the gravel. The Duomat 1200 digital readout thermostat is also equipped with a 220 volt outlet for plugging in conventional mains voltage heater-thermostats.

Following on my article dealing with allopathy, I noticed that a group of investigators (Aliotta, Greca etc) have been systematically testing several aquatic plants for allochemicals that might function as algicides. Greca isolated seven different phenols from *Acorus*

## A to Z of plants

### *Bolbitis heudelotii*

**Common Name:** Congo

**Water Fern**

**Distribution:** Tropical Africa

**Description:** A beautiful and hardy fern. It grows from a tough rhizome which attaches itself firmly to the



*Bolbitis heudelotii*.

PHOTO: BARRY JAMES

substrate. It grows best epiphytically — attached to bogwood or rocks. If planted on the gravel base it is sensitive to humus build up which, if excessive, will kill the plant. It seems to do better in slightly flowing water so a position near to a filter outlet would suit it best. The leaves are dark-green and multipinnate reaching a height of 40-50cm and a width of 5cm or more. If grown emersed the leaves are stiffer and the pinnae are not so divided.

**Cultivation:** Providing the conditions suit it, this is an easy plant which will grow reasonably fast and produce great masses of foliage. Attach the rhizome to rocks or bogwood with a rubber band until attached. These plants are often sold in rockwool pots. Remove the rockwool carefully before attachment. Propagation is by division of the rhizome. *Bolbitis* needs a temperature of between 22°-28°C to thrive and the pH should lie between 6.5-7.2. It needs a semi-shaded position away from direct light. If situated directly under the lamps it can become infested with blue-green algae, which can be difficult to remove from the fine leaves.

**Note:** The Genus *Bolbitis* is of worldwide distribution in tropical areas with some 85 species. Most grow near water and are exposed to temporary inundation during the wet seasons. It is therefore expected that more species will be found suitable for aquaria. *Bolbitis heteroclitia* is often imported from Malaysia but does not seem to thrive underwater for any extended period.

gramineus. The toxicity of the three most abundant phenols to algae and cyanobacteria (Blue-green algae) was found to be comparable to that of copper sulphate. Another development was work which showed that although individual allochemicals were not all that toxic to algae, combinations of them were up to six times as effective. Allochemicals produced by algae themselves

are also turning out to be toxic to higher plants. Blue-green algae was found to severely limit the growth of *Zannichellia peltata*, often known as Eel Grass in the U.K. This is a brackish water plant common in estuaries. The field of allopathy is a fascinating one which will produce a lot of new information and eventually new products to enhance the science of aquaristics.

Swindon 20 miles

M4 (J17) 7 miles  
Bristol 18 miles

#### Fully equipped registered Fish Hatchery and Rearing facility

Purpose built insulated building

Tank capacity (below ground) approx 26,000 gallons

Potential to expand by approx 25%

2 bed cottage available by negotiation

AVAILABLE LEASEHOLD

CHD Property Consultants  
Tel: 0171 734 2080  
Fax: 0171 734 1080

## ALL CLEAR WATER PURIFIERS

Forget claims, for no-nonsense scientific facts — see our independent UK test results at shows and talks. Facts you can see — is anything else good enough?

Contact Ann Telford for technical advice, sales & suppliers

Telephone 01277 214911 24 hr Fax Line: 01277 201740



All Clear Water Purifiers  
59 Hartswood Road, Brentwood, Essex CM14 5AG



# DEVILS WITH A TOUCH OF GOLD



PART THREE

An aggressive male ready to spawn using cut divider method. Note small gap between rock and divider.

PHOTO: MARTIN CHANDLER

MARTIN CHANDLER BRINGS HIS 'DEVIL WORSHIP' TO A CLOSE WITH ADVICE ON ...

## Breeding the Devils

**O**ne of the burning ambitions of many Central American Cichlid keepers is to successfully breed either *Cichlasoma labiatum* or *C. citrinellum*. This is due to the

fact that their temperament makes them quite a difficult species to breed. Success with these species requires patience, planning — and an emergency option.

Not all Central American Cichlids are easy to breed, as is sometimes suggested; certainly with *labiatum* and *citrinellum* there is more to it than one male, one female and one tank. I have

*C. labiatum* spawning.  
PHOTO: MARTIN CHANDLER

had quite a lot of success with *labiatum* but I had to overcome a few setbacks on the road to my success. This article is intended as a guide on how to breed Devils, but it must be remembered that all cichlids are individuals and very often just won't play by the rules!

## VITAL EQUIPMENT

The smallest possible aquarium for breeding these fish would be one of dimensions

120x38x30cm (48x15x12in), however this should be regarded as the minimum size and if larger tanks are available they should be utilised. The best filtration for breeding aquariums is the external canister type but if these are unavailable then both an undergravel and an internal power filter will suffice. In the case of an undergravel system, use a strong powerhead and with internal filters position one at each end of the aquarium, and clean weekly. The heating system must be able to maintain a temperature of at least 26°C (80°F) and a 300 watt heater/stat is ideal. A calcium-rich substrate should be used to a depth of about 25mm (1in); this is very important as digging seems to play a critical part of the courtship ritual. A lighting system is not so important but if you favour lighted aquaria then use a tube of low intensity.

Another extremely vital piece of equipment is a very securely-fixed clear tank divider. This can either be glass (cut to the internal dimensions of the tank) or clear plastic, which is better as it can be more easily shaped. If dividers are to be used then it is very important that they are securely fixed, using very large rocks and trapping them with the cover-glass. I have found this out to my cost, having lost both a female *citrinellum* and *labiatum* after having a divider dislodged. I believed the dividers to be secure, having used medium-sized rocks to support them, however the males were so intent on getting to their respective females that they dislodged them in



their quest. It also seems to me that this sort of disaster always happens whilst I am at work — so now I employ my wife to give my more aggressive species regular checks during the day, so that any battered fish can be rescued.

As well as a divider, a spare tank is a must; nothing too lavish is required, a 60x30x30cm (24x12x12in) will be adequate for emergencies. This tank can be used for both battered females, and males that overdo the parental care.

## NATURAL SPAWNING

In nature, breeding pairs of both *labiatum* and *citrinellum* can control territories several metres across; also, the only time a pair comes together is for that short period during which the female is ripe and ready to spawn. The male will select a ripe female, breed, rear the young for a few days and then abandon mother and young. Obviously these circumstances are very difficult to create in all but the largest public aquarium so how do we get around the aggressive tendencies of both species with the type of confined quarters that we keep them in? Well, I have three suggestions as to how this can be achieved but first it's no use setting up separate quarters for the sexes unless you can positively identify the sexes in the first place!

## IDENTIFYING THE SEXES

There are no real external differences between the sexes of either species.

Both will develop long extensions to the dorsal and anal fins and also a nuchal hump on the head, although in males the hump is likely to be larger and a permanent feature. The male's spawning tube is thin and elongate and, in mature specimens, permanently on show! From the front, mature females are slightly more rounded and shallower. I have also observed a bar through the eye in breeding females at all times, however non-breeding males may also develop this bar.

## BREEDING

Returning to our problem of aggressiveness in confined paces, and my own suggestions for combating this, all three methods employ a tank divider at some stage: as I earlier suggested, a clear plastic or perspex divider is best. As well as being easy to cut to the desired shape there is plenty of flexibility to withstand the charges of an over-excited male — it has been known for these fish to swim straight through thin glass dividers!

The first, and more natural, breeding method is to completely divide the tank in two, placing the male and female into each 'half'. Feed the fish well, including a lot of earthworms and cooked meats in the diet to condition the fish. The aquarium temperature should be raised to 80°F and weekly water changes maintained. As both fish come into condition they will display continuously through the divider to each other, to



## TROPICAL

### *Devils with a Touch of Gold*



Pair of *Cichlasoma citrinellum* mouth-tugging.

PHOTO: MARTIN CHANDLER

ensure you have a true pair, watch for a LOT of rock mouthing and the female rubbing her body on the rocks that she cleans. Her display will be submissive rather than aggressive and if the male parades at speed around his side of the tank, doing a lot of body quivers in the process you know you are on the right tracks. Two males or two females will also display to each other, however, their display is very different involving a lot of trying to bite each other through the divider.

Shortly, the nuchal humps of both fish will visibly swell and some serious digging will occur. It is around this time that the female's ovipositor should make an appearance; this is a thick, stubby tube down which eggs will descend. If there is a reasonable size difference between the sexes, now I would strongly suggest adding a shelter just large enough for the female to enter. I have a variety of both plastic and clay drainage pipes (of different diameters) for this very purpose.

It is now time to remove the divider, and the first few minutes are crucial. If the female gives the wrong signals to the male's display she will soon be attacked. The display will now continue at close quarters and it is rough, with both fish biting each other from time to time. You must keep an eye on them for the first few hours and, provided the female doesn't get cornered, leave them to it. It's often a good sign if she takes short breaks in her shelter, as she will soon learn that she is safe in there. One good display to watch for is of the female

approaching the male with gills flared and he turning side on with body jerking. I have only ever witnessed this display in compatible pairs. However, I do not feel that mouth tugging is a very good sign, as they tend to use it as a test of strength, like we do in an arm wrestle. I have never been able to breed pairs that mouth-tug using the natural method.

Once the chosen rock has been cleaned to the female's liking, she will start running her ovipositor over it, watched by the male. Shortly, she will start to lay eggs, 15 to 25 at a time, and each batch will be immediately fertilised by the male who becomes very subdued during the spawning act. Spawning will last about an hour with 400 to 1,000 eggs being laid, depending on the age and size of the female. Once eggs have been laid and fertilised I advise removing the male to a spare tank or replace him behind the divider. I have found that without a territory to defend the male will try to take over the care of the eggs and fry and may fight with the female. These fights could be fatal for either fish and result in the loss of the spawn, also, now you have got this far, why take any unnecessary risks?

Once the male is out of the way, you will find the female to be a more than capable parent, but never put your hand in the tank unprotected as she will bite hard. The female will fan the eggs for approximately 60 hours when they should hatch. The newly-hatched fry are helpless for five days and will be hidden in a pit. After the five days, they are free-swimming and ready to feed on finely-

crushed flakes and newly-hatched brine shrimp.

Another method of breeding these fish is sometimes known as the window method. This involves breeding a pair where there is an appreciable size difference. A couple of holes are cut into the divider that will only allow the female to pass through. Place all the rocks on the female's side of the divider and place her in the tank on her own at first to get used to going from one side to the other. The male is then positioned and the female will go back and forth as she gets more used to him and ready to spawn. Once eggs have been laid, remove the male and divider, to give the mother and fry free reign of the tank.

The final method I suggest is the cut divider method. Here, a large flat stone (such as a piece of slate) is placed on the bottom of the aquarium. The divider is then cut out to fit in the tank, and around the slate, clearing it by about 1/4 in. Displays will take place through the divider with eggs being laid on the female's side and the male fertilising them from his side through the small gap. With this method, there is no physical contact between the two fish and it is a handy way of breeding with extremely aggressive males.

### FRY CARE

The fry should be fed three or four times a day (and weekly water changes in the fry tank are a must) to ensure

## TROPICAL

### *Devils with a Touch of Gold*

optimum growth rates. Every three weeks, remove about half of the fry and cull them; this ensures that the others will continue to grow, as too many in the tank will result in stunted fry. When you are down to the best 20 left, then stop culling.

The fry will be grey in colour until they reach 10cm (4in) in length, then they will start to colour up. They are now ready to pass on to friends or the local shop. It is very important not to raise too many of these fish, as the market could soon become flooded with them as they will not sell that quickly.

#### CONCLUSION

This breeding article is the concluding part in my series on these truly wonderful fish. I hope it will prove useful in helping other aquarists to understand both species. I have enjoyed keeping them over the years and, in my opinion, they really are 'Devils with a touch of Gold.'

Male *C. labiatum* cleaning a stone.

PHOTO: MARTIN CHANDLER



## Pay a visit to

# WHOLESALE TROPICALS

(RETAIL ONLY)

Large selection of Tropical Fish always in stock  
Plants and Equipment

Many of our customers say we have one of the best selections of tropical fish in London, and probably the country. With over 20 years experience supplying the aquatic trade.

**WE STOCK FULL RANGE  
OF EHEIM PRODUCTS  
PRICES ON REQUEST**

**150** Tanks of tropical fish which normally include 20 species of Synodontis, 40 species of Corydoras, 25 species of killies, Blue Brown Tefe – Turquoise – Heckel discus. Clown – Blue-eye, a good selection of Cichlasoma Apistogramma, and many others. Also Corydoras Panda and Brochis Britskil.

A selection of aquatic grown Cryptocorynes

#### ● SPECIAL OFFER – CASH ONLY AT THESE PRICES ●

Tank, F/top cover, heater, thermostat, internal power filter, GroLux lighting, thermometer, gravel.

24' x 15' x 12' £61.50 – 36' x 15' x 12' £82.50 – 48' x 15' x 12' £98.60 k/down tubular steel stand 24' £30.50 – 36' £32.50 – 48' £36.00

All-glass aquariums 24' x 15' x 12' £13.50 – 36' x 15' x 12' £17.95 – 48' x 15' x 12' £22.50

*Any size of All-glass aquariums made to order at competitive prices*

**If you are in the area please pay us a visit**      **Ask for Terry – Club visits welcome**  
Open: Mon, Tues, Wed, Fri, 10am-6pm. Thurs, 10am-2pm. Sat 9am-6pm. Sun 9am-1.30pm.

**10% DISCOUNT WITH A CUTTING  
OF THIS ADVERTISEMENT,  
APART FROM SPECIAL OFFERS**

**On No 8 Bus Route – Opposite main Post Office**  
220 BETHNAL GREEN ROAD, LONDON E2 Tel: 0171-739-5356 Fax: 0171-729-2444

PRICES CORRECT AT TIME OF GOING TO PRESS

# COLDWATER JOTTINGS

BY  
STEPHEN J. SMITH



## PHOTO JOTTING

### Frozen fountain

The near-arctic weather in the UK over recent months has been met with mixed reactions around the fishkeeping world but, having enjoyed relatively mild winters for the past few years, it really should have come as no surprise.

There is something attractive about the pond in winter: the layer of ice and snow provide an entirely new dimension to the appearance of the pond and to the enjoyment of the pondkeeping hobby.

I had been wondering what effect the freezing temperatures would have upon the bell fountain in my small ornamental pond. Would it freeze as a bell shape? Would it be reduced to a trickle? I was amazed to see the resultant effect, pictured here, which was most attractive. And not only was the 'bell' shape still intact (as it, of course, should have been) but the continuous flow of water helped to keep an area of water free of ice so that the fish (in this case Golden Medaka) would not be deprived of oxygen.



PHOTO: STEPHEN SMITH

### Stocking levels

Further to my note about stocking levels in aquaria (see 'Rotting fins' in December's 'Coldwater Jottings') I have received an email query from Marianne who lives in California, USA, and who tells me that she is a "new pondee". Marianne tells me she has 1 have two, four-inch Koi and six various goldfish in an outdoor pond which measures four feet by eight and is two feet deep. "It is balanced with plants at this time," says Marianne. However, I plan to add a three feet by one foot biological filter/fountain this spring, and I would like to add two Fantails and two Lionhead Goldfish as I

enjoy the variety of shapes and colour in the pond. Do I have room for the increased population?"

Marianne explains that, living in California with a very moderate climate, there is no need to do any special winter care and that she plans to keep the fish in the pond throughout the year. What a luxury — I'm sure many a British pondkeeper would be delighted not to have to put up with the extended winters which the UK presents.

But the 'winter care' factor has little bearing upon the numbers which can be kept successfully in a pond. At the risk of repeating my previous column, I suggest the 'rule of thumb' of one average-sized fish (3-4in) per square foot of surface area — at maximum;

therefore, Marianne's pond would, theoretically, accommodate a maximum of 34 fish. However, do bear in mind that these fish will grow at a rapid rate and I would suggest that this number is halved to provide the fish with 'room for manoeuvre' as well as relieving some of the load on the filter. (And if you were keeping Koi — divide the figure by at least four..!)

### Get clean!

Inevitably, this month's 'Jottings' brings you the annual reminder to don the Wellington boots, arm yourself with a scrubbing brush and a bucket of water — and get scrubbing! Yes, it's spring-clean time again and your pond, fish, and plants, will all benefit from a good scrub round at this time of the year.

So, syphon your pond water into a tub or large aquarium and net your fish into this, remove all plants, and empty the pond — completely. You will be amazed just how much muck and debris is decaying at the bottom of your pond, even if it was given a pre-winter clean.

So remove this too (I use a trusty dustpan and brush reserved for 'fish-use'), then scrub the pond using clean water — never use any cleaning agents at all as they will cause harm to your fish.

Refill the cleaned pond with fresh water, using a dechlorinator to the correct dosage, and allow time for the temperature of the water to equalise with that of the fishes' temporary quarters. In the meantime, cut any dead leaves and stems from your plants, repotting if possible, and return them to the pond. Take this opportunity also to check the pipework and fixings of your pump and filter system — but DON'T scrub the filter medium.

The results of this half-day-or-so's work? A pristine pond which will help to ensure that your pond and its inhabitants will thrive throughout the coming season — and which will provide you with further pondkeeping pleasure. Now wasn't that worthwhile..?

### High standards at Philadelphia show

As thoughts begin to look forward to the forthcoming season, I can't help but look back upon one of my own personal highlights of last season — a trip to the USA and a visit to one of the premier Koi shows in that country. To drive into Longwood Gardens, just 30 miles north-west of Philadelphia, is quite literally driving into the world's most beautiful public gardens. That

### Don't forget ...

... to remember to keep me informed of your coldwater interests. I certainly don't expect you to agree with everything on these pages (I would be disappointed if you did!), so do let me have your own opinions, comments, and information, by writing to me c/o Coldwater Jottings, A&P, Caxton House, Wellesley Road, Ashford, Kent TN24 8ET. And, if you have e-mail, you can contact me direct at: jottings@sjsp.demon.co.uk — looking forward to hearing from you..!

is what the advertising literature — and the sign over the main entrance — says and, having done so, I can only agree. And rightly so: the USA's premier public display gardens provide the perfect location for the celebration of one of the most enjoyable, and enduring of hobbies: Koi-keeping, of course. For here is the venue for the highly prestigious annual show held by the Mid-Atlantic Koi Club. The seventh such Show was taking place the same weekend in mid-October that I just happened to be in the neighbouring state of New Jersey. So, I 'just happened' to find myself drawn to the event to taste my first real-life American Koi show!

To be truthful, it was just like any real-life English Koi show — and for all the finest reasons, only better. Some of the finest Koi were displayed by some very proud owners, and

admired by a very appreciative public. Maybe some of these had never visited a Koi show before, which would explain why one young lad exclaimed: "Dad — I've never seen a Goldfish that big before..!" And here was one of the most attractive features of this show over those I have been used to: the majority of the visitors were there not to see the Koi as such, but to see the splendid gardens within which the show was set. So, some people who may never have encountered the bewitching wonderment of the hobby were able to trip over it for the first time. And, hopefully, will sooner or later become drawn into trying it for themselves.

True, the trade show had been held at a hotel nearby (which maybe was a pity) so you didn't get the milling crowds of 'bargain-hunters' (which, maybe, was not such a

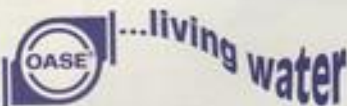
party!). Supporting the event, and held within the magnificent Longwood Gardens complex, was a programme of speakers which included Dr David Pool, from the Tetra Information Centre in the UK, who gave talks on "The secrets of successful Koi-keeping" and on "Maintaining healthy and colourful Koi" (even colourful was spelt in English in the show schedule!); while club stalwart Tom Burton, and Dr Galen Hansen also presented talks.

An apparently 'unique' event in the world of Koi was the "(almost) simulcast video of Koi judging" which enabled viewers in the auditorium to see the judging taking place and to hear the judges' comments, followed by a "Live wrap-up" with a critique of the Grand Champion choice by Head Judge Bob Spinola. In addition, the first judging of the

Society's Special Showa Class was held. This stems from purchase of one-year-old Showas from the same spawning purchased by the Society, and which were distributed to members in a random 'lottery'. Most of the fry had survived the year and they were brought by their owners to be judged. And the Koi placed first belonged to eight-year-old Jennifer Gerlach of Pennsylvania.

Winners of the major awards at this year's show were: Grand Champion: Bob Bransfield — Sanke, over 25 inches; Reserve Grand Champion: Michael Sprouse — Kohaku, 20-25 inches; Young Grand Champion: Stephen Li — Kohaku, 8-11 inches. Mid-Atlantic Koi Club, 3920 Shaker Court, Montclair, VA22026, USA. Tel: (703) 680-2663. Fax: (703) 730-1424.

## SIX CHANCES TO WIN AN OASE FOUNTAIN PUMP



TOTAL PRIZE VALUE OVER £500!



FIRST PRIZE  
OASE NAUTILUS  
4000 pump with  
T-piece and nozzle  
PLUS a LUNAQUA 2  
lighting set complete  
with transformer

FIVE runner-up prizes  
OASE's new AQUARIUS  
1200 fountain pump,  
with T-piece and nozzle



Study these OASE facts and answer the three questions below. OASE's highly innovative approach to pump design can be seen at a glance in both of these models — each neatly and completely encased in an extra-large strainer basket with quick-release clip clasp.

The 60W NAUTILUS 4000 pump moves up to 65 l/min. (880 gal/h), with up to 3.9m (122ft) head of water. Bearings and rotor shaft are of a wear-resistant ceramic material, the motor housing and rotor are of stainless steel, and elimination of the need for a dynamic shaft seal means minimal friction — hence, virtually silent running.

High performance, with remarkably low power consumption, is equally a feature of OASE's LUNAQUA 2 halogen underwater light. Its intense beam can be varied for spread and angle to achieve the most dramatic effect. With it comes a 230/12V safety transformer, cable, connecting bracket and a stake for mounting the light

outside the pond, if preferred.

The new-generation AQUARIUS 1200 pump benefits from the very latest Flexible Impeller System, packing it with the power to move up to 20 l/min. (264 gal/h) on just 15W and with up

to 2m (6ft) head of water. A protective earthing sheet around the motor is of stainless steel and resin-sealing of electrical components provides further safety assurance.

As the pioneer of three-year guarantees on home and garden pumps, OASE offers this confidence-boosting back-up on the AQUARIUS 1200 as well as the NAUTILUS 4000.

Send your answers on a postcard (or back of a sealed envelope) with your own name and address to: OASE COMPETITION (AP), Caxton House, Wellesley Road, Ashford, Kent TN24 8ET, to arrive no later than March 31st 1996. Winners will receive their prizes direct from Oase.

### QUESTIONS

1. To which component does the NAUTILUS 4000 owe its silent running?
2. Apart from the transformer, which one of the LUNAQUA 2 accessories must not be used in the pond?
3. OASE was the pioneer of what long-term confidence-booster?

# THE THICK-LIPPED GOURAMI



**B**ack in the seventies I used to keep mainly community fish and had a pair of Thick-lipped Gouramies. Even in those days there was a range of Gourami species to

BY **IGGY TAVARES, PHD**

• PHOTOGRAPHS BY THE AUTHOR •

choose from. There was the smaller Honey Gourami and Dwarf Gourami, and the larger species such as the Blue and the Pearl to name a but few. I had chosen the Thick-lipped Gourami not only

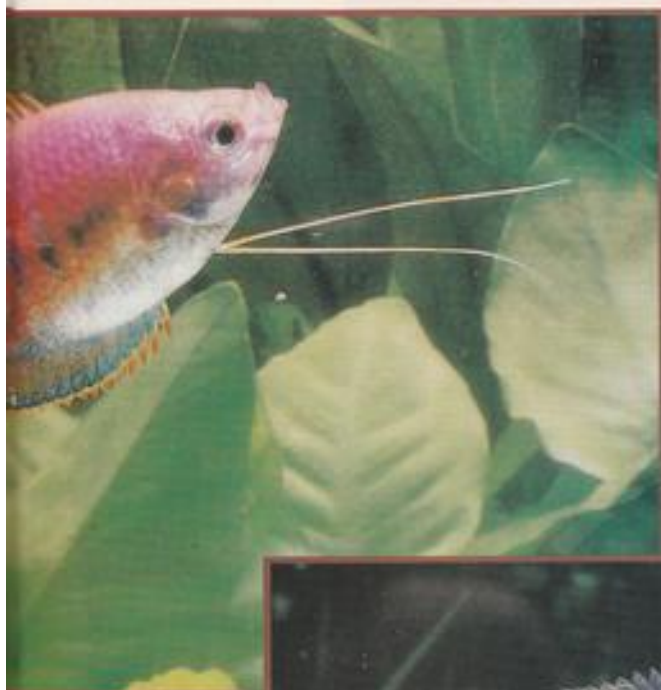
because of their apparently docile nature but also because the males were beautiful coloured fish. The Gouramies were housed in a busy community fish tank and I never saw any spawnings.

Recently I decided to keep and study the Thick-lipped Gourami again.

*Calisa latiosa* (Day) the Thick-lipped Gourami, originates from India and Burma.



Male sunset gourami.



ABOVE  
Male thick-lipped  
gourami.

where during the hot rainy season they are even found in the rice paddy fields which are flooded with water. The Thick-lipped Gourami is an anabantoid and has a special labyrinth organ which is filled with air every time the fish comes to the surface, in order to aid breathing in very warm, low-oxygenated waters.

At my local fish shop, Morden Aquatics, I found that another colour strain of the Thick-lipped Gourami was now available. These were called Sunset Gouramies, where both males and females were a golden brown colour all over, although the females were less colourful. I noticed that the Sunset Gourami strain were smaller in size than the original wild type fish. I am usually a fancier of wild type fish and in any case I preferred the colouration of the wild type male and hence bought a pair of these.

The wild-type Thick-lipped Gourami are deep bodied fish where the male can

grow to 4in (10cm) with the female a little smaller. The male's body is a reddish brown with a series of parallel, horizontal blue bands. The dorsal and anal fins are suffused with blue with a marginal brown edge. In the breeding period, the male's silver throat and belly go darker in colour. Females are less colourful fish having a lighter barring pattern. Both male and female pelvic fins are in the form of long thread-like extensions.

### AQUARIUM MAINTENANCE

The Thick-lipped Gouramies were housed in a 30in well planted tank with floating plants as well, in order to

## AQUARIUM CARE

**Aquarium size:** 24x12x18in (60x30x45cm)

**Aquarium decoration:** Well planted tank is best.

**Temperature:** 26°C-28°C

**Water:** Clean water, hard or soft

**Diet:** Tetramin flake, some live or frozen food

BELOW  
Female sunset gourami.



provide cover for the female should she need to escape the male's attention. The tank had an under-gravel filter powered by an air pump so as to create little turbulence. Some water was changed every three weeks or so. The aquarium was lightly stocked with a small shoal of Harlequins and another of Cherry Barbs as well as a pair of dwarf *Nanacara anemala* cichlids. I fed the fish with Tetramin flake two or three times a day and waited.

### SPAWNING

Within a few days, in one corner of the aquarium, the male started building a nest which consisted of a mass of bubbles. He was also courting the

## TROPICAL

### The Thick-Lipped Gourami

female on every possible occasion. Under the nest this courting sometimes involved vigorous tail beating usually followed by a chase if the female was not ready to spawn. I had arranged some caves, to offer the female some respite from the attentions of the male. One afternoon, spawning took place under the nest. The male wrapped himself around the female and turned her over so that she was upside down. She then released her eggs while she release her milt. They stayed in this embrace for a few seconds, then broke apart and the male collected the eggs and spat them into the nest with a few more bubbles. The spawning embrace was repeated time and time again, and lasted over an hour. The male then chased the female away and since the tank offered plenty of cover, I left the female in.

The male Gourami was an excellent father and kept all the other fish including the bottom dwelling dwarf cichlids away from the nest. The eggs hatched in just over a day and appeared as tiny black slivers much less than 0.1in in length. The male Gourami was kept

busy keeping the fry in the nest while trying to terrorise the rest of the tank occupants. The fry were free swimming in another three days. I did not have the space or the inclination to rear all the hundreds of fry and these were slowly picked off by the other fish in the tank.

For fry rearing, all the fish including the male Gourami should be removed, once the fry are free swimming. The fry need to be fed on very tiny foods such as powdered Tetramin, and some live foods such as rotifers and other organisms found in green water and later on newly hatched brine shrimp. They of course need to be moved into bigger tanks as they get bigger to keep them growing.

### CONCLUSIONS

The Thick-lipped Gouramies are a handsome pair of fish which will add colour and interest to the community aquarium. The Sunset Gourami colour strain, which are also pretty and popular, can be bred and the fry reared as for the

wild type fish. The Thick-lipped Gourami is a hardy fish, readily available and relatively inexpensive. I have enjoyed keeping them and studying their breeding habits and I am sure you will too.



## Middleton Discus

### MegaBio Filter

- THE FILTER DISCUS KEEPERS HAVE BEEN ASKING FOR
- THE "BIG" BIOLOGICAL SPONGE FILTER THAT REALLY WORKS
- IDEAL FOR BREEDING TANKS
- EACH SPONGE HAS A HUGE SURFACE AREA OF 74 SQ INS
- CAN BE USED WITH ANY GOOD QUALITY AIR PUMP



**MegaBio Single**  
(25 gallons)

£15.00 inc. P&P

**MegaBio Twin**  
(50 gallons)

£20.00 inc. P&P

PROVIDING FOR THE "SERIOUS DISCUS KEEPER"

Send to: MIDDLETON DISCUS, UPPER BERLLWYDD,  
BETTWS NEWYDD, USK, GWENT NP5 1LB  
TELEPHONE 01873 880658

## WHAT ARE YOU BUYING YOUR PET?

Hundreds of Gift Ideas at  
**PETS AND AQUATICS**

**ACE PETS**  
**01233 611442**  
**BYBROOK BARN,**  
**ASHFORD**

FOR ALL YOUR PETS &  
ACCESSORIES  
POND LINERS & PUMPS  
TROPICAL & MARINE FISH  
FISH TANKS & CABINETS  
Foods & Tropical Plants

# STARTING WITH DISCUS

## *The Sequel*

**BRIAN MIDDLETON CONTINUES HIS INTRODUCTORY SERIES ON THESE TOP OF THE RANGE FISHES.**

**A** common complaint I hear from many people is that they bought Discus from the first dealer they visited, and then saw some at another place which were much better. Unfortunately, by then it is too late because most people don't have the room, or the money, left to correct their mistake. Consequently a serious error has been made right at the beginning of their Discus keeping endeavour. We can solve that problem straight away.

While you are setting up your tank, letting it settle, and giving the filter time to mature, go and have a look at some Discus. View as many Discus as you can, at as many different places as you can. What will happen is that, after visiting a few different establishments you will make up your own mind, and you will see that there are many variables. I will attempt to give you an insight into what to look for, without offending any dealers or having any arguments (for a change!).

### CLEANLINESS IMPERATIVE

First, and by far the most important criteria is cleanliness. There is no excuse whatsoever for a dealer having an unclean tank containing Discus. The one thing that is most important for the health of a Discus is cleanliness. Anyone who is selling Discus should be even more fastidious, because of the amount of fish that are passing through each tank. If the person you are buying the Discus from is a dealer, i.e. someone buying Discus from one or more sources, he or she has to be particularly aware of disease, and quarantine the fish



Solid Steel Blue.

PHOTO: BRIAN MIDDLETON

accordingly. To quarantine a Discus thoroughly, takes six weeks and there really is no short cut. Every time a Discus undertakes a journey of an hour or so it becomes stressed, and the more journeys it takes, the more stressed it becomes. The more stressed it becomes, the likelihood of it succumbing to illness is greater. All you have to do is use common sense. If your mature Discus is being bought from a dealer, it means it has probably come from the breeder, via a wholesaler. Therefore there should already have been 12 weeks of quarantine, six by the wholesaler, and six by the dealer. However, if your Discus has come from a breeder straight to a dealer we are talking about a proper quarantine period of six weeks. For the first six weeks the dealer should heat,

feed, clean and treat the Discus with medication.

Quite frankly, it is apparent that this is not always the case. Some fish are just too small. To establish that a Discus is showing normal growth, it should have a body size of at least 3cm (50p piece) at eight weeks old. If it is any smaller it is stunted, and Discus under 3cm really shouldn't be bought (or sold) as they require a complex, dedicated feeding regime to ensure perfect health up to 3cm (see Diagram 1).

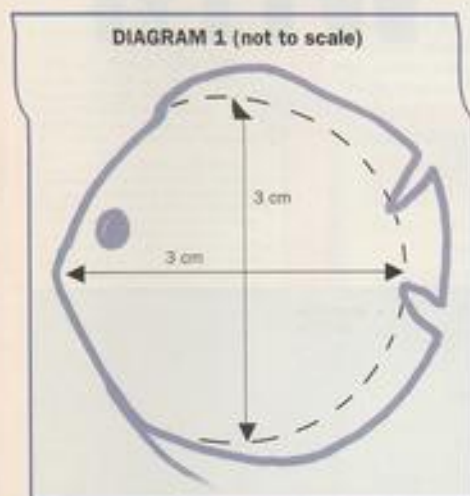
### GOOD TIP

When you purchase your Discus don't be afraid to ask questions. Ask to see them feeding, as healthy Discus will always feed (unless of course, they have



## TROPICAL

### Starting with Discus



At 3 cm: DISTANCE FROM TOP TO BOTTOM OF BODY (excluding dorsal and anal fins) = DISTANCE FROM NOSE TO BASE OF TAIL (excluding tail) = 3 cm. In other words, if you draw a cross and then join it with a circle surrounding it, that is the shape a Discus should be at eight weeks old or more.

(just been fed). Another good tip is to gently put your hand over the top of the tank, the Discus will rise up inquisitively. If they don't, then leave them alone, as something is amiss! One very important thing to look for is the size of the eye. It should be in relation to the rest of the Discus. They should not protrude when looking at the Discus head on. When a Discus becomes ill it will stop feeding and consequently stop growing. However, its eyes will continue to grow, therefore if a Discus has gone through a bad period of stress or illness its eyes will look much larger than they should. **DON'T BUY IT.**

IF ITS FINS ARE CLAMPED TO THE BODY, again **DON'T BUY IT.**

If the Discus shape is not perfectly round, once again — **IT IS DEFORMED AND WILL NEVER BE A GOOD SHAPE. DON'T BUY IT.**

### ASK QUESTIONS

If possible, buy your Discus direct from a genuine breeder. There are a few good reasons for doing this. First, and foremost the stress factor, if it has not been moved around the country, or indeed the World, it is less likely to have a stress related illness. If a Discus is only moved once, from a breeder's tank to a customer's tank the chance of it being stunted through stress-induced illness is very low.

**ASK TO SEE THE PARENTS** (of the fish!). Most genuine breeders won't mind, although the doubtful one might say his friend is breeding them at another location, or that they are sick at present. Always make sure that the parents are of the same strain, as you know all the negative sides of cross-breeding from one of my previous articles.

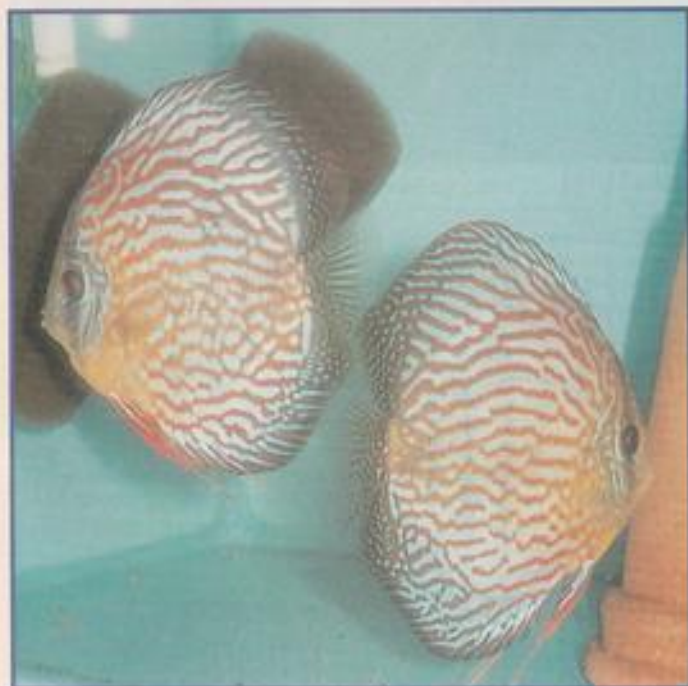
Another thing to steer very clear of are Discus with all the fancy names. These "varieties/names" exist only in the breeder's or dealer's head, the actual fish are generally very inferior crossbreeds. The breeders have had to invent a pretty name for these Discus before they are saleable, and practically everyone who purchases these fish are disappointed. As they grow on, they become both a waste of time and of hard-earned money. Anyone who thinks — they can buy a **BLUE DIAMOND** or **SUPER SUNSET HIGH FINNED RACING DISCUS** for only £20.00(!!!) needs to think, as this is nothing but crossbred trash. You have been warned!

There are some private breeders offering twenty different varieties for sale, but when I tell you that the fish farms abroad with 1000+ tanks haven't got the space to breed that many varieties, I am sure you must understand why I become suspicious.

### PRICE RANGE

To give you some idea, the latest money-spinner for these "breeders" are Blue Diamonds. Now anyone who knows Discus knows that Marc Weiss is the only Breeder in the world breeding these fish. Their true description is as follows:

They have no stress bars at all.  
They have no marks on the face.



Perfect pair of Scribbled Reds.

PHOTO: BRIAN MIDDLETON

They have a bright blue tail.  
They are completely brilliant blue.

As for the current prices, please refer to the February issue of **A&P** and read Mark Weiss' letter on page 62, confirming that the current price of a genuine Blue Diamond ranges from \$750 for a youngster, to \$10,000 for an adult. Steer clear of the unscrupulous dealers who are breeding Cobalts with Pigeon Bloods and calling the blue offspring Blue Diamonds (or Diamond Blues). They are not, and never will be genuine Blue Diamonds. Please take my advice, find some good, well-raised fish with a "normal" name, and you will incur far less problems in the long run, and you are then part way to having Discus you can do something with.

### DISCUS KNOWLEDGE

Another reason to buy from a genuine breeder is that if someone is breeding Discus on a regular basis, he/she must have accumulated a great deal of knowledge and experience about the species. Therefore they will be able (maybe not willing), to answer a lot of the questions you should be asking, such as: How many different foods is the Discus taking regularly? How many times

a day is it being fed? A Discus of less than six months old should be fed at least four times a day, and more if it will eat it. As long as you vary the diet you cannot overfeed a Discus, although tank pollution is something you should be extremely aware of.

### NUTRITION

In my opinion, all Discus should be fed at least one meal of beefheart mixture per day. Any of the books on caring for Discus will give you a recipe for beefheart mix, or, when you get hooked on keeping Discus, you will probably want to adapt this to make your own recipe. In the meantime most good tropical fish shops stock a Discus mix, or a frozen beefheart mix. As well as beefheart, I recommend you feed at least two other foods such as Prima by Tetra or frozen Bloodworm once or twice a week. Another favourite which is eaten greedily is freeze-dried Tubifex, basically the more varied the diet, the better. In my opinion the best, most nutritious food has got to be the good old earthworm, just give them a thorough rinse under the tap and chop them finely on the chopping board (when your wife isn't looking) and watch your Discus make short work of them. They are

absolutely the very best food your Discus can have but, **MAKE SURE THEY COME FROM A PART OF THE GARDEN THAT ISN'T EXPOSED TO ANY WEEDKILLERS OR CHEMICALS.** If you use this feeding regime as a guide, you can be assured that your Discus won't be undernourished, or bored due to lack of variety.

As a direct result of this initial careful selection process, and feeding regime, there is every chance that you will be rewarded with perfectly healthy, fast-growing Discus.

**FEEDBACK:** It has been pointed out that in Starting with Discus (**A&P** February) the mathematical equation for calculating the volume of an aquarium was wrong. The magic number, to divide all those cubic inches by, should have been 277, not 231. Brian's got less water in his tanks than he thought!

**MY NEXT ARTICLE WILL COVER SOME OF THE MORE COMPLEX AILMENTS ASSOCIATED WITH DISCUS KEEPING, ALONG WITH SUGGESTED CURES.**



# CASTLE AQUATICS



- 90 TANKS OF TROPICAL AND COLDWATER FISH
- FULL RANGE OF ACCESSORIES
- KOI CARP
- POND EQUIPMENT

*We stock everything you need*  
**SPECIAL OFFERS ALWAYS AVAILABLE**

## IT'S OUR BIRTHDAY!

*We'd like to thank all our customers  
for making our first year so  
enjoyable*

SPECIAL BIRTHDAY DISCOUNT VOUCHER  
**20% OFF ALL SALES**  
VALID UNTIL END MARCH 1996

PRESENT THE ABOVE VOUCHER TO BENEFIT FROM OUR 20% BIRTHDAY VOUCHER

Open seven days a week Mon-Sat 9.30am-6pm, Sun 10am-4pm  
426 Well Hall Road — Eltham — London — SE9 (near the Welcome Inn)  
0181 856 0505

# Sea View

BY GORDON KAY



Lots of stuff came my way one way or another, as '95 became '96, so I've plenty to tell you about. For a start, what about the new creature that was discovered on lips of the Norway Lobster? For those who missed it, scientists discovered a strange parasite — *Symbion pandora* — living on the lips of the Norway Lobster early in December. The truly amazing thing, though, is that the creature represents a new Phylum, because it is totally different from anything else in the World. Apparently, only three Phyla have been discovered in all of this century and, with between 30 and 100 million species on this earth, only 35 Phyla exist. The Phylum is called Cyclophora ("ringed creature") and has a unique feeding organ. This is a frond-coated funnel, which can steal food particles from the mouth of its host lobster, whilst it clings on with a sucker. Mind-blowing.

You will recall me telling you of the way in which dolphins were having their fins hacked off by Spanish fishermen in the Straits of Gibraltar. You will also remember that, at the same time, I drew to your attention the fin drying farms in the hills of Andalusia, where the fins were being processed — along with shark fins — for export to the Far East? Well, after that news broke in the Press, readers sent more than £2,500 and the Foreign Office issued a grant for £17,000 to the Gibraltar-based charity Helping Hand, so that they could buy a new 31ft monitoring boat. This is wonderful and the charity founder, Eric Shaw, paid tribute to the generosity and goodwill of the British people. Terrific stuff!

I recently received a campaigning members' newsletter from the Whale and Dolphin Conservation Society (WDCS), which contained a

couple of items which I think you should know about. The first was about a letter received from the Department of the Environment, which said that just because Cardigan Bay and the Moray Firth had not been designated Marine Special Areas of Conservation (SACs) yet, does NOT mean that they had been completely ruled out. To quote the letter, "It does, however, mean that issues were raised in the public consultation which need to be considered more fully". This is encouraging news, because it means that the two sites really will get the recognition they deserve. The second thing was an accusation by WDCS that Italy were one of the main culprits of killing dolphins in driftnets. They claim that over 2000 dolphins are caught in Italian nets in the Mediterranean every year and believe that Italy is blatantly abusing current European law which bans driftnets over 2.5 kilometres long. The WDCS is currently joining forces with other groups to take the US Government to court, in order to force them to take action against the Italians, in keeping with a law passed in 1992 which requires the government to instigate trade sanctions against any country which breaks driftnet laws. I shall keep you posted on any developments I hear about.

Staying with the Whale and Dolphin Conservation Society, one of their Press Releases arrived at the A&P offices recently. It seems that the WDCS is demanding that Japan immediately stops whaling in the waters of the Southern Ocean Sanctuary in the Antarctic. The Sanctuary is an internationally-agreed area where whales are supposed to be protected from the threat of whaling, but where Japanese whalers are believed to have begun this year's "scientific whaling programme". WDCS is urging Japan to abide by the resolution passed at the International Whaling

Commission, asking nations not engage in scientific whaling within the Sanctuary. It is also asking Japan to use non-lethal research methods as recommended by the IWC. The Japanese Whalers were expected to start returning with their catch at the end of last year. They were openly boasting of intending to kill more than 400 Minke whales during their trip — a massive increase on their '94 kill of 330 whales. WDCS Campaigns Director, Chris Shroud, said "... it is incomprehensible why a highly-developed nation like Japan still feels the need to indulge in this barbaric practice. There can no longer be any moral, economic or scientific justification for mercilessly culling vulnerable whale populations".

WDCS is asking people to write, asking Japan to take note of World opinion and stop whaling immediately, to: The Fisheries Councillor, The Japanese Embassy, 101 Piccadilly Circus, London W1V 9FN. If you care anything at all

about whales, then please write.

And staying with that story, the Daily Mail carried a double spread on the very subject of Japan's activities in Antarctica on December 12th. Obviously, as is usual with the Press, the whole thing was rather sensationalised. However, it was all there in words AND pictures. The whole sorry story of how whales are butchered to death in the name of "scientific research", only for the majority of the meat to end up on Japanese plates at a cost of £130 per pound. The twist, however, is that the man who took the pictures (and made a film which was seen in 23 countries), Mark Votier, was facing an action by the Japanese Institute of Cetacean Research because he broke an agreement with them to let them censor his footage. He was in danger of having to pay out compensation of £200,000! Unbelievable. Totally unbelievable.

## SNIPPETS

The upper lip of the Dugong (*Dugong dugong*) is covered with sensory bristles. It is a versatile and complex structure, used to grab seagrasses and convey them to the mouth. An adult Dugong — sometimes called sea cows — can eat as much as 40 kilos of seagrass every day.

Snappers and Bass do not often noticeably change colour as they mature. One notable exception is the Black and White Sea Perch, *Macolor niger*. As a juvenile, it is attractively dressed in a black and white suit, which is replaced in the adult by a speckled grey and white pattern, becoming almost sooty grey depending on the fish's mood.

False eyes are common as a form of defence amongst reef fishes, but they are usually located near the tail of the animal. This is designed to deflect predatory attacks to the tail, which it thinks is the head. In this way, the intended prey escapes with little more than a few torn tail filaments. However, the juvenile Lemonpeel Angelfish, *Centropyge flavissimus*, has its false eye in the middle of its body. So far, there is no satisfactory explanation for this paradox.

## Books



**Malawi Cichlids in their Natural Habitat (2nd edition)**  
Author: **Ad Konings**  
Publisher: **Cichlid Press**

ISBN: 3-928457-29-2

Price: £39.95

Available from selected retail outlets and by mail order (P&P free) from: Cichlid Press (UK), The Gatehouse, Horseshoe Road, Spalding, Lincolnshire PE11 3JA.

Lake Malawi's cichlids first reached this country at the end of the 1960s, and have steadily increased in popularity ever since. Aquarists soon discovered that there were rather more cichlids species in the Lake than any of the existing literature even hinted, and identification became a nightmare with the trade obliged to invent names for fishes which, quite simply, didn't have a proper scientific tag. During the 70s and 80s a number of helpful hobby books and scientific papers were published; however, it was not until 1989, with the publication of *Malawi Cichlids in their Natural Habitat* by Ad Konings, that a real milestone was reached — at last a book that endeavoured to reconcile science and hobby, as far as identification was concerned. Even more importantly, the work took us beneath the surface of the Lake, to learn about the biotopes, natural behaviour and social relationships of its cichlids — essential information, not just for the Malawian enthusiast but also for the beginner with these fishes who cares about getting things right.

A lot of water has flowed into the Lake since 1989: some taxonomic problems have been clarified, while others have sprung up to take their place — some species long known to aquarists by informal, 'trade' names now have proper scientific ones, but a lot more new cichlids have been discovered. These come not only from the Malawi coastline, but also from the previously virtually unexplored (aquaristically and ichthyologically speaking) shores of Tanzania and Mozambique. Improved political stability means it is now possible to dive and collect cichlids there, in daylight and

# Reviews

without fear of being shot! Not only that, but further underwater researches, largely by Konings himself, have brought to light a wealth of new information on the private lives of the cichlids in their natural environment. All of this more than justifies — it necessitates — the publication of a new, much improved and expanded edition of this classic book.

As before, the cichlids are grouped according to habitat, in chapters, each of which takes us on a grand tour of such habitats around the Lake, telling us which forms and species are found where. A map — loose for ease of reference — is provided to enable us to pinpoint the localities mentioned. The whole is illustrated with a wealth of colour photographs, including most of all the species and forms mentioned in the text and, in most cases, taken in the actual habitat rather than the aquarium.

Even the most dedicated cichlidophile is unlikely to be able to digest all of the information in this book; it is a book to read, and re-read, as one's interest in these cichlids develops, or chapter by chapter as it changes from group to group over the years and one to consult for details of any particular species, as and when necessary. Like *Lake Malawi and its fishes*, it is worthy of repeated and detailed study, with something new to be learned every time you dip into it. Aquarists who already own the first edition should not allow that fact to deter them from investing in this new one, and those who have been trying to keep Malawi cichlids without Konings' help would do well to rectify their omission without delay!

MARY BAILEY

### **The Brackish-water Fauna of North-western Europe**

Author: **R. S. K. Barnes**

Publisher: **Cambridge University Press, 1994**

ISBN: 0 521 45529 4 (h/b);

0 521 45556 1 (p/b)

Price: £40.00/£15.95

Books on brackish-water fauna never seem to fall within the province of the fresh water biologist or the marine biologist, hence the need for this book packed with information about physical

characteristics, the ecology and the flora and fauna of the variety of brackish water habitats in northwestern Europe.

The book is divided into two parts. Part 1 is called *Brackish-water biology* and starts with an interesting account of the origins of brackish-water habitats, which in itself is good enough reason for having a look at the book.

Part 2 is an identification guide to the animal species found in brackish-water habitats. The list is so comprehensive and thorough that the student will not have to resort to both a guide to marine species and one on fresh water.

ANDY HORTON



**What Should I Do? — A Practical Guide for the Freshwater Fish Farmer**  
Author: **H.-J. Schlotfeldt and**

**D. J. Alderman (with others)**

Publisher: **European Association of Fish Pathologists**

ISBN: 0-9526242-0-6

Price: £9.00

This book is a fish-disease guide which deals largely with carp and trout. Having said that, it will prove extremely informative for the serious pondkeeper who maintains Koi, Goldfish and other coldwater ornamentals. Compiled by a multi-national team of fish-disease experts, this 60-page Guide offers authoritative and up-to-date practical advice, which can be readily understood by the layman.

Divided into 50 sections (for easy access to information), each of the majority deals with a specific disease with information presented under sub-headings — pathogen/causative organism; temperature at outbreak; clinical signs; mortality rate; diagnosis; transmission; prevention — with the final heading in each section aptly entitled 'What Should I do?' and offering sound practical advice on how to tackle the disease problem.

Other remaining sections cover more general topics such as hygiene, disinfectants and water parameters. Section 43 provides a useful list of important pathogens associated with coldwater ornamentals (principally cyprinids) plus some of the common environmental causes of disease in these species. Overall, sections are well presented and the text is clear and easy to follow.

The Guide, which is in A4 format, is lavishly-illustrated with over 100 glossy colour photographs designed to aid disease identification. These include fish displaying signs of disease, internal pathology and high-power magnification photos of fish pathogens.

Certain parts of the book will be of limited interest to the ornamental fish hobbyist, notably those sections dealing with salmonid diseases (although some salmonid pathogens can also infect other groups of fish). Nevertheless, the Guide reveals an insight into some of the major health problems associated with coldwater fish culture in Europe, together with EC legislation concerning notifiable diseases and movement of livestock. Having read these sections it becomes clear why import regulations are necessary for coldwater ornamentals.

The Guide is not intended for the aquarium hobbyist although it does cover several infectious diseases of tropical and coldwater aquarium fishes, for example, Whitespot, *Trichodina*, Flukes and *Saprolegnia*, to name a few. The aquarist must bear in mind that certain recommended procedures, treatments and water quality parameters may not be applicable to all species of ornamental fish and, in this respect, some of the practical advice given must be interpreted with care. Partly for this reason, the Guide could not be recommended for the beginner.

To summarise, this is an excellent Guide, which is also good value for money, and a pleasure to read. I would recommend it to anyone who is professionally involved with coldwater ornamentals, as well as the advanced amateur.

DR PETER BURGESS

The Guide is available from: EAFP General Secretary, D. W. Bruno, SOEAFD Marine Laboratory, Victoria Road, Aberdeen, Scotland AB9 8DB. Please note: the full payment must be sent with order (cheques made payable to EAFP).

## CD Roms



**Sharkal**  
Published by:  
**The Discovery  
Channel,**  
marketed by  
**Astrion plc,**  
142 Great

**North Way, Hendon, London  
NW4 1EG. Tel: 0181 202  
0011**

Format: **CD-ROM for PC  
(Windows) and Macintosh**  
Price: **£39.99 (see details  
below for Special Offer to A&P  
readers)**

This is about the safest way to learn all there is to know about Sharks and only marginally less realistic than walking through any acrylic tunnel at modern public aquariums. Thankfully it doesn't quite start off with the Jaws music but the opening sequence is no less dramatic — what might just be an atomic submarine approach turns out to be one of the more dangerous cartilaginous creatures in the sea. Fortunately, there's a reassuring female voice-over to guide you into the welcoming observation chamber where you are in complete control of where you go next.

Where to? That's the rub for there are no less than seven options — Video Gallery, About Sharks, The Shark Body, A Shark's Life, People and Sharks, Ask the Expert and Shark Tag. In addition there are other features such as Help, More, Search and, eventually, Exit.

Selecting Video Gallery invites you to view movies entitled What is a Shark?, Connoisseurs of the Deep, Are Sharks Dangerous?, Extrasensory perception, JAWS: Then and Now, Meet the Shark, The Great White and Why Study Sharks? Whilst watching the video, in part-screen display is accompanied by a visual transcript of the commentary with highlighted words that can be defined direct from the Glossary; full-screen presentation is also possible.

No less than seven sections comprise 'About Sharks,' twelve in 'The Shark Body' four in 'A Shark's Life' and five in 'People and Sharks.' Each of these main subjects have an additional section called Common Questions too. The common presentation screen used for viewing has functional tool buttons which enable saving text to Clipboard; Print delivers articles or transcripts to paper; Related Topics guide you to other items on the same topic whilst Search gives an

alphabetic list of topics and keywords on the CD! If you feel disorientated after all this time, Log gives you a listing of where you've been since leaving the Main Menu and Back will take you to a previous sub-menu. Ask the Experts lets you hear four top Shark experts respond to some of the hard-to-answer Shark questions.

Having learned all there is to know about Sharks from the presentation, then the Shark Tag game will hold no terrors for you; simply select a level of play, choose a category and match Shark 'parts' to their appropriate counterparts. Having whetted your appetite (or controlled your fear) of Sharks you may want to learn more: a comprehensive Shark Resources provides details and addresses of Books, Magazines, Government Agencies and Shark-related organisations. Go into the water the safe, CD ROM way and you'll have nothing to fear — just plenty to learn!

**DICK MILLS**



**Ocean Planet**  
Published by:  
**The Discovery  
Channel,**  
marketed by  
**Astrion plc,**  
142 Great

**North Way, Hendon, London  
NW4 1EG. Tel: 0181 202  
0011**

Format: **CD-ROM for PC  
(Windows) and Macintosh**  
Price: **£39.99 (see details  
below for Special Offer to A&P  
readers)**

Like the previous title, interaction by the viewer is predominant in this programme. This time you are transported beneath the waves in a submarine and view the main presentations in the Ocean Planet Oceanarium. The main console directs you to In Danger?, Current Connection, Planet Ocean, Undersea Theatre, Sharing the Planet, Ask the Experts and Library; if you wish to be more precise in your selectivity, a Search button lets you choose a particular subject.

In Planet Ocean, the choices include The Earth's oceans, Ocean Environment, Land under Water, Tools of Oceanography and Ocean Surface Exploration; a History button keeps a progressive log of your choices, whilst Lobby returns you to the main Console. The six sections in Current Connection, each with their own multi-subject contents, show how the Earth, Sun, Moon and Oceans interact to form atmosphere and weather. In Danger? has five

detailed sections showing what Man has done to upset the system and how certain measures are working to redress the balance, including how some animals are doing their part too. Sharing the Planet lets you experience the many ways in which people and oceans have mutually benefited each other throughout history. In the Undersea Theatre you can relax and watch a fourteen minute journey of various threads of oceanic action — you can, of course, select each segment or simply push the Play All button. Ask the Experts and Library sections fulfil the same functions on oceanic themes as described previously for Sharks.

Whilst there is no game to play as a relaxation, there is a bonus for Windows users; a number of 'Wallpaper' designs are included, each with a topical theme, for you to customise your computer's desktop background.

As the oceans play such an enormous part in supporting life both in water and on land, and affect weather patterns too, this programme should be of interest to everybody no matter where they are on the Earth's surface.

**DICK MILLS**



**Seashore Life**  
Published by:  
**Anglia  
Multimedia,**  
**Anglia House,**  
**Norwich NR1  
3JG. Tel:**

**01603 615151**  
Format: **CD-ROM for PC  
(Windows) Macintosh and  
Acorn**  
Price: **£39.99 plus VAT**

Answering children's questions is never an easy proposition, even more so when they're found something on the seashore and want you to identify it! Now, all you have to do is sit them down in front of the home computer (or let them take it to school and use their Acorn machine) and run Anglia's Seashore Life CD ROM programme.

Appropriately enough, you start off at the Lighthouse, the centre of operations. In here you can examine the Bookcase,

a database of the animals and plants you'll be finding on the seashore; the Filing Cabinet explains how and why the life-forms are classified into different groups — Vertebrates, Invertebrates, Mammals, Plants, Fish etc. On the Television (well, the lighthouse-keeper got to keep up with the soaps too!) you can view 24 movies and 13 animations of seashore wildlife.

But it's out and about you'll really enjoy: the Map gives five locations to explore — Rocky Beach, Sandy Beach, Shingle Beach, Cliffs and Estuary, where upon arrival you'll use the magnifying glass to examine your chosen object. Each is accompanied by a text panel and this can be read aloud to you if required. Clicking on an Ear symbol brings audio of background or species. Activating the pile of books brings database information whilst the Big Fish Eating Small Fish icon shows where the species fits into the food chain. An Eye symbol indicates a video clip is available and in every picture a Lifebelt literally brings Help. Returning to the Lighthouse is always possible.

On the entertainment (edutainment?) front, clicking on Boots and Bucket back inside the Lighthouse takes you through a step-by-step Key to enable identification of species you've found but cannot name. The Quiz Magazine provides three simple quizzes: two on animals, one on plants.

Bearing the Anglia Survival pedigree, it goes almost without saying that the quality and presentation are superb and, as such, makes for easy learning (you can save and print text and pictures too). None of the controls are complicated — you don't even have to be able to read — and travelling from one scenario to another is simplicity itself. Eventually, I suppose, you'll be able to take a copy of this programme along with your portable laptop and perform on-the-spot identification, but you can take part of the programme on location with you now in the form of Activity Sheets which can be printed out ahead of your visit to the seashore; some Activity Sheets require access to the CD ROM.

**DICK MILLS**

**Special Offer to A&P readers — Astrion plc have generously offered a fantastic opportunity to obtain either Sharkal or Ocean Planet CD ROMS at half-price (£20.00 each — including postage). All you have to do is send in your name and address with a cheque for the relevant amount (payable to MJ Publications Ltd.) and we'll arrange for the programmes to be sent to you direct from Astrion plc. Please note that this offer closes 1st April 1996. Allow 28 days for delivery.**

# BUY LINES

Barry James'  
round-up of latest innovations for your  
pond and aquarium

## King British launches new fish foods with immuno health booster



The immune system holds the key to life and death in all living things. Co-enzymes reinforce the existing supply of antibodies supplied by nature. The Immuno Health Booster now added to certain King British Fish Foods help fish win the battle against disease and infection. The new ingredients have been added to King British Tropical and Coldwater Flake Foods and also to Pond Pride Ultimate Koi Food. Pond Pride Floating Food Sticks have been reformulated to include stabilised Vitamin C.

Pond Pride Water Treatments consist of six different numbered formulations including: 1. Chlorine Control; 2. Fish Waste Control; 3. Parasite Control; 4. Fungus Control; 5. Fin and Tail Rot Control; 6. Green Water Control.

Further details of all products described above from: John Harper-Teo, Press/PR Consultant to King British. Tel: 01733 232327. Fax: 01733371327.



## New hydrometer

UNDERWORLD have launched the new Sea Test Hydrometer, the only Hydrometer guaranteed to give an accurate reading. Every one is tested before being packaged. The new improved model is graduated from 1.00 to 1.030 which allows it to be used for both brackish water (as used for breeding Brine Shrimp etc), as well as for marine aquaria. There is also a matching scale showing the salinity in ppt (parts per thousand) for scientific use. An added bonus is that the price remains unchanged at £15.99!

Another product which caught my eye was AquaGrit a pre-packed, clay-based, lime-free gravel. AquaGrit does not affect the pH or hardness of the water and is therefore ideal for pH sensitive fishes such as Discus, and is also ideal for plant growth. Three sizes of bags are available.

## Innerspace CD Roms

From TWO LITTLE FISHES OF AMERICA have come three CD ROMS.

The first deals with living

coral reef systems from

around the world. It is an introduction to ecosystems from the Bahamas, Caribbean Islands and the coral atolls of the South Pacific. You get close-ups of unusual coral animals, including invertebrates and marine fishes, and an in-depth look at the inter-relationships between them.

The Coral Collection deals with the Corals themselves which are responsible for building the great Barrier Reefs of the coral seas.

Finally we have the Caribbean Fish Collection. With a witty and informative narrative by Graeme Teague and stunning photography of tiny species suitable for aquaria as well as Barracudas, Sharks etc this CD has more than 137 professional images.

These discs play on more than 10 different computer platforms including Mac, Windows, Unix, OS/2, CdI, Saturn, Pipin, Sony, Playstation and Kodak Photo CD players.

Details for all the above products from: Underworld Products, Units 1&2 Belton Road West, Loughborough, Leicestershire LE11 0TR. Tel: 01509-610310. Fax: 01509-610304.

## Ultramarine Sea Salts

Ultramarine Sea Salts have been manufactured in the U.K. by WATERLIFE RESEARCH INDUSTRIES since 1963. Marine fish have been maintained in water containing this formulation for over 14 years. Its high Alkaline reserve ensures good formation of bones, teeth and endoskeletons in vertebrates and invertebrates. It is also essential for the maintenance of all species of desirable algae. Unlike some poorer quality salts Ultramarine does not require the addition of a dechlorinator and dissolves faster.

Ultramarine now comes in new re-sealable plastic containers for ease of storage and optimum freshness. Available in 10,20,50 and 100 gallon sizes.

Bacterlife is a new Bacteria culture and is a complex blend of those essential nitrifying

bacteria present in aquarium

filtration that enable fish wastes to be broken down improving water quality, reducing stress on all creat in the aquarium and helping prevent disease.

Due to the advanced scientific formula the bacteria will remain dormant until they are required.

Due to popular demand Waterlife have released two very special combination kits one for freshwater aquarium fish and the other for pond.

The Tropicare Kit contains 6.5 pH Buffer, Fungus Cure Bactericide, Parasite Cure, Hole-in-the-Head Cure, Plant Fertiliser, Dechlorinator, Bic Range pH Kit, and Blackwater Tonic.

The Pond Care Kit contains Fungus Cure, Green Water Treatment, Parasite Cure, Dechlorinator & Water Conditioner, Bactericide, Nit Test Kit, Pond Tonic Salt and Pond pH Test Kit.

For more information contact Waterlife Research Industries Bath Road, Longford, West Drayton, Middlesex. Tel: 01753-685696. Fax: 01753-685437.

# BUY LINES

## New Uno heater/thermostats



UNO are moving competitively into the 21st century with a brand spanking new heating system which completely rejects traditional ideas and calls on the latest in computer design. State of the art micro-switching controls achieve "total reliability coupled with the highest quality."

The two major problems associated with traditional designs are burnt out contacts and oxidised air gaps in component connections. This leads to thermostat failure — either boiling or freezing the tank's inhabitants.

The micro-switch is constructed of heat resistant and, highly robust, glass-filled nylon and the stainless steel actuating spring (with a temperature range from 0°-100°C) has fine silver contacts, giving high precision temperature control. The bi-metal strip performs the single function of temperature control and no longer carries electrical current (a function carried out by the micro-switch) so that

electrical control and temperature switching are split into two separate functions. The Micro Switch Controls are so advanced and sophisticated that they have the technical ability to last beyond the life expectancy of the average fish tank.

The new heater/stat units are available in easily identifiable wattages, sized for different tank sizes. Uno is part of the King British Group.

## New tropical water lilies and nelumbos

Richard Gallehawk, the proprietor of the DORSET WATER LILY COMPANY, specialises in the production of plants for the water garden. The list of tropical Water-lilies is the finest in the British Isles.

Included amongst the offerings for 1996 are several new varieties:

Tina is a small to medium variety with blue flowers tinged with purple at the base.

Mme Gonna Walska is a small to medium violet variety with a viviparous habit.

Yellow Dazzler is a deep yellow of large habit.

Green Smoke resulted from a cross between a yellow and a blue variety. The resultant plant has bluish-yellowish-green flowers of a very unusual colour.

All the plants above are of a day-blooming habit.

Sir Galahad (a pure white) and Maroon Beauty (with maroon-red flowers) are both night blooming varieties and of a vigorous nature.

Nelumbium momo botum is a fairly rare dwarf Japanese Lotus. It grows 4 to 5ft in

## New range pumps

I suppose some Koi installations might approach swimming pool dimensions, so any owners of such large ponds will be interested to know that STUART TURNER have upgraded their range of Swimming Pool Pumps!

The XB range offers three pumps with flow rates of up to 350 litres per minute and heads of up to 19 metres. The new models feature: High performance and reduced noise levels using minimum power output.

Drain plug to reduce damage during the winter months.

Threaded connections on both suction and delivery.

Strengthened pump body and improved filter basket seals.

A large strainer basket.

A new secondary earth bonding stud is fitted to the bottom of the pump head which, when connected, ensures the water is earthed.

Back on the more modest sized (even miniature) aquatic scene, Stuart Turner has recently launched its brand new range of "Water Nymph" submersible water pumps. From indoor water features to outdoor pond waterfall and fountain displays,

there's a Water Nymph pump ideally suited to your requirement! Stuart's compact Mini Nymph and even smaller Micro Nymph

have been specially designed for use in indoor water displays. These whisper-quiet, reliable pumps can be camouflaged by even the smallest of ornaments, yet are capable of producing heads up to two feet and flow rates up to 66 gph. The pumps are continuously rated, fitted with an adjustable flow control and feature simple filter arrangements for easy cleaning. Both come complete with three metres of cable and plug, a 13mm push-fit connection and retail at £20.99 and £21.99 respectively including VAT.

The submersible Water Nymph Range of Pond Pumps range, consists of four models, the Water Nymph 130, 220, 330 and 550 (the pump model refers to the maximum flow gph), capable of producing between three feet and ten feet heads.

Paul Manning, Stuart Turner's Aquatic Sales Manager commented "Our new range of Water Nymph pond pumps are ideal for use in all garden ponds and water features requiring waterfalls and fountain displays". Each pond pump is made of a solid construction and requires little maintenance. The Water Nymph 130 and 220 have 15mm push fit connections, the Water Nymph 330 and 550 have 1/2" BSP male connections. All models are continuously-rated. Ten metres of cable and a two year guarantee come as standard, and prices range from £39.95 to £90.95 including VAT.

For more information about the wide range of pond pumps (either submersible or surface types) and other aquatic products please contact:

Stuart Turner direct on (01491) 572655 or Clare Tidwell, James Goddard at The JJ Consultancy. Tel: (01865) 343100.



height, with leaves some 18in in diameter. It bears a profusion of scented dark-rose coloured flowers.

Nelumbium Shiroman has huge white flowers tinged with green at the base.

Nelumbium Debbie Gibson is a large cream variety from Australia.

Richard also has large stocks of *Thalia dealbata*, a semi-hardy marginal plant of impressive statistics. Growing up to six feet in height outdoors — and

ten feet in a conservatory — it has striking lance-shaped foliage with a mealy appearance and panicles of purple flowers in late summer. Amongst other species on offer, *Pontederia "Blue Spires"* (developed by the company) has very broad, curly and striated foliage with a glossy surface and long spires of blue flowers.

The Dorset Lily Company can be reached on 01935 891668.



DAVID TWIGG'S

# KOI CALENDAR

Winter is almost over and water temperatures are starting to rise in the unheated pond. Please exercise caution if tempted to feed though as March winds can cool the water back down very quickly in the smaller ponds. Do you keep a

log of air and water temperatures? Digital 'Min-Max' thermometers are very reasonably priced these days as compared to when I started my log back in 1985. If my memory serves me well my first thermometer cost me £29.95; the new one purchased just a couple of days ago was £12.95.

Keeping a log should include other items as well as temperatures; in my case I include the volume of water added to the pond on a daily basis and at this time of year the High and Low air temperatures under the cover as well. I have an electric water heater as well operating on the Economy 7 time schedule and in order to find out how much this was costing me to run I built a circuit that has an hours counter display and that figure is also logged. Other items mention in the remarks column are observations such as fish 'bumps and bruises' noted, any pond treatments carried out, mains water filter pre-filter

A parasite (Dactylogyrus) seen through my microscope at 100x magnification.

PHOTO: DAVID TWIGG



The speaker at the **Northants Section BKKS** meeting in October was Paul Stacey of Shirley Aquatics. Paul is well known on the lecture circuit and informed and entertained the group with his talk on parasites that was followed by a lively, general discussion on keeping Koi.

News just in is of a newly formed Koi club in Lincoln. This group of Koi keepers are calling themselves the **Witham Valley Koi Society** and will give special emphasis to the needs of beginners to our hobby as well as catering for the experienced hobbyist through a diary of knowledgeable

speakers at their meetings. Social and summer activities such as barbecues and visits to dealers and to other clubs will be arranged.

Any reader interested in more information about the Witham Valley Koi Society should give Geoff Green a ring on 01522 512718.



My MMR purifier "plumbed" into my pond system — all new water passes through it on the way to the pond.

PHOTO: DAVID TWIGG

changes and back-flushing amongst other things. It really makes quite interesting reading and can give an insight into how the Koi 'system' in our garden works.

One of the phenomena that can often be observed in the spring is the rapid expansion of the parasite population in the pond. As the water warms so the parasites breeding cycles start and if not properly managed can cause many secondary problems. We know that such infestations are identified by a number of symptoms such as 'flicking, flashing, twitching and rubbing' as well as hanging in the water, often near the in-fall of water, but these may not necessarily be caused by parasites and often are not. Poor water quality may well be a major contributor to these symptoms at this time when the filter has not yet managed to cope with the increasing load it finds itself having to handle.

So before throwing a chemical cocktail into the pond it is necessary to check what parasites, if any, are present in the system. This is where the microscope comes into its own. Scrapes can be taken from the Koi and scanned under the microscope for signs of parasitic infestation. Large quantities show themselves pretty quickly and, if the scrape is processed soon after being taken then the live parasites will still be active in the mucous and much easier to see.



## 1996 SHOW CALENDAR

### MAY

- 4/5 **International Koi Show**, Bletchley Exhibition & Leisure Centre, Milton Keynes. Contact D.J.s Koi, 01922 493290 for further details  
 26/27 — **Merseyside Section BKKS**, Open Show at Camphill, Woolton. Contact Phil Adamson, 0151 2202970  
 26/27 — **South Hants Section BKKS**, Open Show at South Downs College, Crookhorn, Havant. Contact George Rooney, 01420 473169

### JUNE

- 1/2 — **Yorkshire Section BKKS**, Open Show at Lotherton Hall, Leeds  
 15/16 — **Crouch Valley Open Show**, Barleylands Farm, Billericay. Contact Vic Boreham, 01268 524232  
 29/30 — **Middlesex & Surrey Border**, Indoor Open Show, Kempton Park Racecourse, Sunbury. Contact Cynthia Hudson on 01372 453215  
 30 — **Suffolk & North Essex Section BKKS**, English Style Open Show, Langham Community Centre, Nr. Colchester. Contact Mavis Carter, 01206 866011

### AUGUST

- 10/11 — **BKKS National Show**, Billing Aquadrome, Northampton. Contact Lou Jackson on 01322 463669

### SEPTEMBER

- 8 — **Leicestershire Section BKKS**, Annual Show. Contact Mick Reffin, 0116 2712517

## MONTHLY MEETINGS

### MARCH

- 6 — **Leicestershire Koi Section BKKS**, Monthly meeting. Contact Mick Reffin, 0116 2712517  
 7 — **Suffolk & North Essex Section BKKS**, A.G.M. Contact Mavis Carter, 01206 866011  
 9 — **Heart Of England Koi Society**, Meeting in Warwick. Quiz night. Contact me on 01926 495213  
 10 — **Mid-Somerset Section BKKS**, Ron Phillips speaks on 'Creative Pond Construction'. Contact Alan Purnell, 01458 272132  
 11 — **Northampton Section BKKS**, Speaker is Barry Goodwin. Contact Albert Dav, 01604 407361  
 12 — **Nottingham & District Section BKKS**, Open Forum, The Weston Club (off Derby Road), Hillside, Nottingham NG7 2HP. Manager Bob Lynes, 0115 978 4932  
 13 — **South Hants Section BKKS**, Speaking on Water Quality is Adrian Excell of Interpet. Contact George Rooney, 01420 473169  
 13 — **Merseyside Section BKKS**, Monthly meeting. Contact Phil Adamson, 0151 220 2970  
 17 — **Northern Koi Club**, Speaker, at the George Carnall Leisure Centre, Ulmston, is Derek York. Derek's subject is 'DIY Pond Construction'. Contact Tony McCann, 0161 794 1958  
 20 — **Crouch Valley Section BKKS**, Speaking on Koi Health is Peter Saul. Meet in Laindon, Essex. Contact Ron Parlour, 01277 840863  
 24 — **British Koi Keepers Society**, Annual General Meeting, Moat House Hotel, Northampton  
 26 — **Northern Koi Club**, Beginners Seminar (Part 1). Contact Tony McCann, 0161 794 1958

My thanks go to all Koi club Secretaries or PROs' and others who send me their latest calendar for inclusion in this column. 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. Ideally I need to have information at least 10 weeks before the date of the event to guarantee publication. You may of course ring me direct on 01926 495213 which will allow a little leeway. This request also applies to dealers with special events, auctions, etc. I look forward to hearing from you. All Koi keepers are welcomed to the events mentioned in this calendar (an entry fee may be payable). Further details can be obtained from the contact telephone number quoted alongside the diary entry.

Please write to me at your earliest convenience via the Editor at ME Publications Ltd., Caxton House, Wellesley Road, Ashford, Kent, TN24 8ET. Thank you.

Filtration Specialists



Home of the  
**Starfilter**

the best range of koi pond filters you can buy



SAND PRESSURE FILTERS

AIR PUMPS

FLOW METERS

FLOAT SWITCHES

TANK CONNECTORS

POND VACUUMS

MATTING

NETS

FIBROMIX

SEALANTS

SKIMMERS

VENTURIS

CANTERBURY SPAR

G4 POND PAINT

BOTTOM DRAINS

SPARE PARTS

VALVES

HEATERS

FOOD

LYTAG

BOWLS

LINERS

ALFAGROG



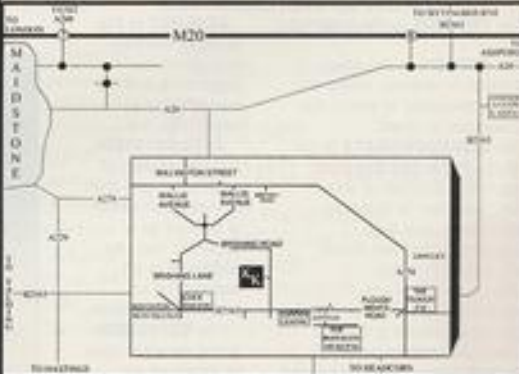
- Tank hire
- Project planning and consultancy
- Filtration design
- Disease prevention and consultancy service
- Fabrication service (PVC welding and machining)

Send two first class stamps for our catalogue and filtration guide

KOI KRAFT (A)  
 Mount Pleasant Farm  
 Brishing Road  
 Chart Sutton  
 Maidstone  
 Kent ME17 3SP  
 Tel: (01622) 743413  
 Fax: (01622) 743307

If you are visiting us for technical assistance please telephone first

**OPEN** MON - FRI 9.30 - 5.00  
 SATURDAY 10.00 - 1.00  
 SUNDAY CLOSED



# SHORE WATCH

BY ANDY HORTON

# An A B C of

## Rockpooling

PHOTOGRAPHS  
BY THE AUTHOR

Serious rockpoolers realise that the month of March is a special month for the exploration of the shore. It is at the low equinoctial spring tides during the early spring tides that the rock pool fish, nudibranchs (Sea Slugs) and other invertebrate animals venture onto the lower shore to lay their eggs.

Arguments and disagreements about the sea and the life that lives within often hinge on definitions and their interpretations. In this encyclopaedic guide to the terms used in rockpooling and marine biology, I hope to be able to clarify and explain some words in normal use.

---

---

### e

The **EBB TIDE** is the outgoing tide.

The **ECDYSIS** is the stage of the moult in prawns, crabs and other arthropods, in which the exoskeleton is shed.

The **ECHINODERMATA** is the phylum of invertebrates that contain the Starfish or Sea-stars, Sea-lilies or Crinoids, Sea Urchins, and Sea-Cucumbers. They are found exclusively in marine environments and are distinguished by a water vascular (conducting vessel) system. All species contain tube-feet, which have developed into spines on the urchins.

The **ECHINOIDEA** are a class of echinoderms that comprise the Sea Urchins. When the Urchin dies it leaves a calcareous test.

**'ECO-TYPE'** (an abbreviation of ecological type) refers to a form of an animal specific to its environment. It is usually used of an animal that varies in form or behaviour but is actually the same species, e.g. the Bottlenosed Dolphins have both an in-shore and off-shore eco-types that behave in different ways.

**ECOLOGICAL SUCCESSION** is the chronological succession of events in an ecosystem, e.g. the successive colonisation of a marine rock by bacteria, microalgae, Acorn Barnacles, Sea-squirrels, Sea-anemones, Limpets, Mussels, Dogwhelks, Seaweeds and other growths. The equivalent in aquaria is the establishment of nitrifying bacteria, micro-organisms, microalgae, scavengers etc.

**ECOLOGY** is the study of animals and other organisms and the environment in which they live.

An **ECOSYSTEM** is a community of organisms and their environment which is treated as a separate unit. An aquarium is an example of an artificial ecosystem.

The **ECTODERM** is the external layer of tissue of an animal.

The **ECTOPROCTA** is an alternative name for the phyla of Bryozoa or moss-animals (see January issue).

**EELS** is the common name for several species of bony fish including the Common Eel (*Anguilla anguilla*), that begins life in the western Atlantic Ocean, and migrates to fresh water and, from a different family, the Conger Eel (*Conger conger*), that remains in the sea.

**EELGRASS** is the only flowering plant found in marine habitats around the British Isles. The genus *Zostera* is found in suitable estuaries. This important habitat for some of our rarer marine species, including the Sea-horse, is declining and the few remaining sites need protection from human damage.

The **ELASMOBRANCHI** are vertebrates with true jaws and a cartilaginous skeleton. This

class of 'fish' includes the Sharks, Skates and Rays. This name is more widely known than the *Chondrichthyes*.

The **ENDODERM** is the internal tissue of an animal.

The **ENDOSKELETON** is the internal skeleton of an animal.

**EPILITHIC** means living on the outside of a rock e.g. Acorn Barnacles. Endolithic means living within a rock e.g. Piddocks.

The **EQUINOX** is the time of the year when the sun appears vertically overhead at the equator, and when the period of the daylight is the same length as the period of darkness. Equinoxes occur two times every year. The Vernal or Spring Equinox occurs on 20 March in 1996 and the Autumnal Equinox occurs on 22 September 1996. The highest spring tides occur around the time of the equinox, when the tide also recedes the furthest.



An Edible Crab at the ecdysis stage of the moult, discarding the old shell or exoskeleton.

# CICHLID Secrets

by MARY BAILEY



Triglachromis otostigma — the "hippopotamus cichlid"?

PHOTO: MARY BAILEY

## MUD, MUD, GLORIOUS MUD ...

A cichlid that eats mud? You may think I'm kidding, but *Triglachromis otostigma* (sometimes called the 'Otto') does just that. And it is not just sifting mud for edibles with its huge mouth — mud (in significant quantities) has been found in the stomachs of dissected specimens.

And that's not all that is odd about this strange Tanganyikan. Its huge, fan-shaped pectoral fins are thought to be used as sensors, to detect anything living (and edible) in the mud. It is mud-coloured to match its environment; and it lives and breeds in tunnels which it excavates in — you guessed it — mud.

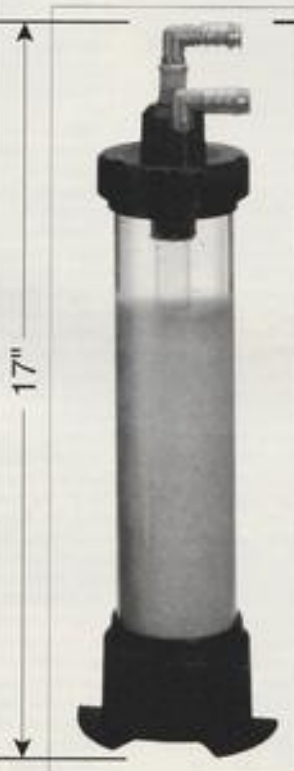
Notwithstanding which, these charming biparental mouthbrooders (the parents pass the fry from one to the other) do not need mud to thrive in captivity — sand or gravel for substrate is fine. And they will eat just about anything with obvious enjoyment.

BASED ON SCIENCE - WORKS LIKE MAGIC!

# "MERLIN"

## FLUIDIZED BIOLOGICAL CANISTER FILTER

THE ULTIMATE BIO-FILTER FOR ALL AQUARIUMS



### BENEFITS:

- Over conventional biological filters*
- Capacity**  
*Over 20 times the filtering capacity of the same volume trickle filter*
- Efficiency**  
*Optimum availability of oxygen, ammonia and nitrite to the nitrifying bacteria, maximizes the conversion from Ammonia to Nitrate.*
- Response**  
*At least 35% faster than a trickle filter with 5 times the volume of filter media in total conversion of Ammonia to Nitrate*
- Constant motion**  
*Constant motion ensures thin bio-film (bacteria colony) and prevents build up of detritus that causes clogging (channeling effect) and anaerobic areas.*
- Maintenance**  
*No regular cleaning or maintenance required.*

### FEATURES:

- For all types of Aquariums up to 250 gallons*
- Compact design (patent pending) 17" total height.*
- Releasable canister design enables easy access for set-up or maintenance.*
- 360 rotating inlet for ease of installation.*
- Unique design to ensure trouble free fluidization on start-up.*
- Rugged construction, custom engineered moulded parts.*

### INSTALLATION OPTIONS:

- In aquarium, filter compartment or sump*
- Hang-on.*
- Freestanding external filter.*

### TECHNOLOGY:

Thousands of hours of our research into Reef, Marine Fish, Tropical and Goldfish Aquariums have shown that a fluidized bed is the most efficient and effective form of biological filtration. The same engineers and scientists that produced the Patented **Red Sea Berlin Skimmer** have optimized this extensive biological research and development into the most advanced, user friendly, state-of-the-art fluidized bed filter for the Aquarist

**Red sea**  
fish pHarm Ltd.

P.O.B. 4045, Eilat 88000 Israel  
Tel: 972-9-567107, Fax: 972-9-567110

UK DISTRIBUTOR  
Coral Reel Technology Ltd.  
62 High Road, Byleet  
Surrey KT14 7DL  
Tel: 01932-355121, Fax: 01932-349716

THE FILTER  
FOR ALL  
DEDICATED  
FISHKEEPERS

# Wake up to Spring

**G**azing into the crystal ball (clarity by courtesy of all the equipment, additives and UV lamps!) a definite maybe is indicated that Spring is about to arrive but what does this mean for the pondkeeper — existing or otherwise?

According to the amount of theory expounded in the aquatic magazines last autumn, fishes should be waking up, with healthy appetites, to find their ponds in pretty good condition. However, it's not just the state of existing ponds and fish that form the interest. There are many people just itching to get into pondkeeping for the first time — as well as a few ambitious folk who have been planning away during the winter months to



will either cost you far more than you realised or it just isn't possible. Without being too blunt about things, this is 'make up your mind' time with a vengeance. You will find advice on choosing a pond inside this Supplement.

If you already have a pond, is there room for improvements? Perhaps you need advice on certain aspects of maintenance, maybe you want to

'upgrade' their ponds or accessories to further sophistication and even higher levels of enjoyment

Taking the newcomers first, it is all too easy to rush out and buy exactly what you think you need only to find, in a few months time, you got it wrong or, worst of all, changing it to how you want it now

try another kind of fish or use the pond in another kind of way, say, for wildlife? Did the long, hot summer of '95 leave your pond with problems? If so we have help at hand to explain things for you. Whatever your pond interest, the season starts here — welcome to outdoor fishkeeping 1996!

## CONTENTS

### There are Ponds ... 46

An investigation into what kind of pond you really want.

### Making of a Pond 49

**Susan Stephenson** looks at the installation theories of a pond but leaves the hard work to you.

### Wildlife Pond 54

Ponds aren't always meant for fish and sitting beside — give

wildlife a place to call their own.

### Invasion of the Frogs 58

How an increasing population of amphibians can seriously alter your life.

### Pump up the Action 62

Pumps need TLC as much as the rest of the pond.

### Springtime Challenge 64

Help your Koi to regain (and

retain) their vitality after the long, cold winter.

### Bonsai 68

Create your own pond side living trees — in just the size and shape you want.

### Legacy of '95 71

Take a tip from last year's summer and be prepared for a hot '96.

## WAKE UP TO SPRING

# There are Ponds... and there are Ponds

In the beginning, ponds were, in essence, living ladders on one hand and defence mechanisms on the other. Fortunately today, we do not need to surround our houses with water to keep out invaders nor to keep a fresh supply of food available. Our interest with a water-filled hole is much less practical and much more aesthetic.

With the increase in the leisure hours available to people (unfortunately often enforced these days, as much as well-earned) there has been a proliferation of Garden Centres and most have an associated aquatic section. After a few visits to such places, visitors can come away with plenty of ideas for a pond in the garden but, in the absence of real knowledge, can jump to the wrong conclusions about what is needed to suit their apparent desires. To take an example (political correctness, or poetic licence, allowing), a couple may decide between them that a pond is wanted but one person wants a modest-sized, pre-formed pond with aquatic plants and fountains whilst the other just cannot envisage life without Koi, to the experienced fishkeeper such a combination might not be feasible for a number of reasons. Others may want a water feature without fish at all or perhaps a wildlife pond free of all those encumbrances such as filters and things.

Of course, everything is ultimately possible but, in fishkeeping, not always at the same time and compromises must be made. The problem with compromises is that they never really suit every requirement with the result that nearly every aspect is usually disappointing. Before setting out on the road to a pond, do take time to work out just what you want it to do for you, only by understanding how the pond works (no matter what its format) can you hope to get long-term success, and enjoyment, from it.

### THE NATURE POND

Having to admit, in a fishkeeping magazine, that ponds without fish not only exist but can be attractive almost smacks of heresy but how often do we pause beside a waterscene and marvel at the surrounding plants and the numerous aquatic and waterborne insects before moving on, not realising we hadn't given fish a thought?

Building a nature pond has its own rewards but it should be pointed out that converting such a pond for fish use at a later date isn't always possible.

By definition, nature ponds are designed for natural wildlife and are constructed with this purpose in mind. As the wildlife using the pond will, again by definition, be seasonal, it need not be built to support aquatic life through the rigours of the winter, nor have a filtration system, as a fish-containing pond has to be. Again, in order for the wildlife to be able to use the pond certain design principles need to be included — shallow water areas, escape and entrance ramps for amphibians, surrounding shrubs, or sheltering low plants, for sanctuaries for animals getting to and from the pond without fear of predation by birds.

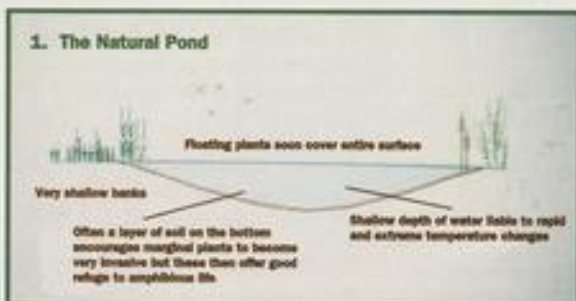
Re-assessing these features from a

fish-culturing point of view, it will quickly become apparent that the water temperature (and overall conditions too) will not remain stable for long enough to avail fishes of a stress-free environment — being too hot in summer and too cold (almost solid ice) in winter. Again, the siting on the nature pond is often in a more secluded part of the garden and probably too shady for decorative aquatic plants to really flourish. As far as shallow water and gentle approaches are concerned, what could be more of an encouragement to herons — and small children? On a practical front, siting a nature pond near to a vegetable patch could be very productive in cutting down insect damage to your edibles — frogs from the pond will soon devour any damage-making aphids!

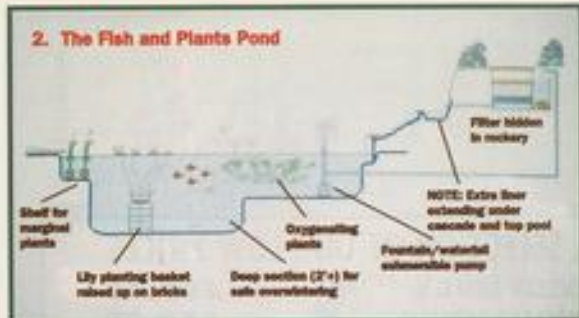
### EVERYMAN'S FISH POND

In general, this is what everyone thinks they mean by a pond. The water's edge is disguised by flowering marginal plants, Water-lilies adorn the surface and occasionally, with just the gentlest of sounds, a fish may break the surface of the water, nearby a colourful dragonfly or damselfly flits from plant to plant whilst the trickling sound from the cascade or fountain soothes away all daily stress.

Creating this vision requires careful planning. The pond must be sited correctly so that the aquatic plants receive their correct amount of sunshine; trees (with their shade, dropping



## 2. The Fish and Plants Pond



leaves and invasive roots) are all enemies of the pond but, perhaps favourites for kingfishers. Remember to allow space for external filtration systems (using the rockery made from the dug out earth is generally the rule, or else sink the system in the ground alongside the pond, and cover it with decking to form a patio, or sitting area). There will also be the need to supply electricity (mains or low voltage) for the pump, fountain or pondside lighting. The water depth should be of such dimensions that the overall volume of water offers stable conditions (the bigger the better); there should be both deep and reasonably shallow parts of the pond, shelves for marginal plants are usually incorporated into the designs of pre-formed ponds but should be planned for when digging out your own design. Be sure that the design, and the siting, of the pond is right for you: it shouldn't overpower the rest of the garden but, on the other hand, it must be viewable from all the right places. Using a hosepipe laid out in various designs and places, then viewed from within the house (including upstairs) will help you to arrive at the right decision.

## THE RAISED POND

The contents of this pond will be much the same as for the previously-described 'in-ground' pond but it does have distinct advantages. First there is no back-breaking hole to be dug — just a few back-breaking bricks and cement to be carried! Real advantages include a real sense of safety both for children and for the infirm, a wet, slippery in-ground pond's surround can be very treacherous (reports of drownings in raised ponds are few and far between). Again for the infirm, pond maintenance is so much easier with a raised pond; there is no bending down over water and, if seats are incorporated into the pond wall, much of the maintenance can be carried

out sitting down — now there's an incentive! Extending on this theme, any 'electrics' or hardware could be concealed within the 'seats'. Siting a raised pond on a patio with its back against a wall can be very advantageous if the back wall just happens to be shared with, say, the garage — all the filtration equipment can be placed in the garage (for easy servicing convenience) with connections to the pond made directly through the shared wall.

To make a raised pond, all that is needed is a brick box lined with a pond liner. An alternative method, and one with even more merits, is the use of interlocking 'logs' to form the box which is then lined in the usual way; a bonus here, is that it can be dismantled when you move house and taken with you and, secondly, such ponds come in various sizes; ideal for even the smallest garden or patio area but bear in mind the latter are more suited as a water feature (with perhaps a single miniature Water-lily) than for long-term fish keeping. During winter, the actual water temperature in a raised pond can fall below that of an in-ground pond, unless steps to insulate it are taken during construction.

A compromise design is the semi-raised pond where, for instance, one face of the pond is exposed through a vertical face such as a wall (even with a window incorporated into it) proves an ideal way of installing a pond on sloping

land; some ponds can be arranged in tiers and connected (in water terms) by falling cascades or direct waterfalls overflowing into each other.

## THE KOI POND

A pond for Koi is, if you'll pardon the phrase, a very different kettle of fish. It is a specialist subject and one, as Koi keepers will point out, not to be entered into lightly. Koi make different demands on their pond design than do Goldfish or smaller ornamentals. It is recommended that the minimum depth of the pond should be in excess of 1.5 metres (as opposed to the more normal 60-90cm depth of the Goldfish pond). Because Koi are hearty eaters two things become evident — not many plants survive in the pond, and there's a proportionate amount of waste products to contend with too! As a result, the water becomes very polluted and depends heavily on the efficiency of the pond's mandatory filtration system to keep conditions within safe limits. It is not unusual for a filtration system to be a third of the size of the main pond. During construction, it is normal for bottom drains and side 'ports' to be built into the base and walls of the pond for efficient cleaning and filtering to occur. Erecting a pergola type of covering over the pond will bring some relief from direct sun during summer, and also prevent the pond being spotted by herons.

## CONCLUSION

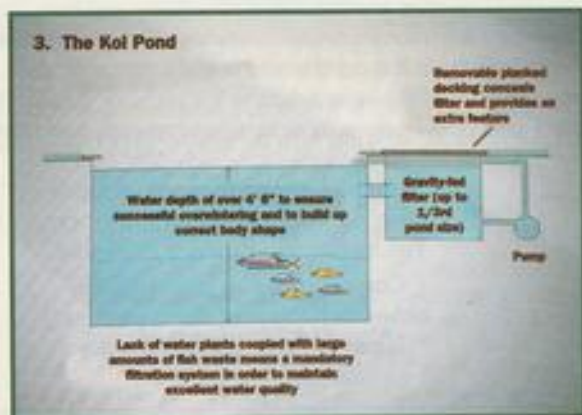
From the foregoing, it can now be appreciated that very careful planning is needed for any type of pond if it is to succeed to your expectations. Most manufacturers of pond materials and associated equipment offer well-stocked catalogues with good advice sections,

draw up a list of your needs and also a plan of where you intend to install it.

A visit to a specialist water garden centre will pay dividends as knowledgeable staff can go through your plans with you and advise on all aspects of your dream pond.

The rest is up to you.

## 3. The Koi Pond



WAKE UP TO SPRING

# The Making of a Pond



**SUSAN STEPHENSON** GETS THE POND SEASON OFF TO A GOOD START WITH SOUND FOUNDATIONS AND BASIC POND CONSTRUCTION GUIDELINES.

● PHOTOGRAPHS BY THE AUTHOR ●

**M**arch is the time to start construction of new pools, to be in good time for spring planting. Careful thought must be given to materials to be used in construction, whether the pond is to be formal, informal or a nature

feature; features such as fountains or waterfalls, water-course runs and what equipment (if any) will be required all have to be considered at the outset rather than later. A pool should be built to last, carefully planned and easily maintained.

Pools should have two depths, one averaging 1.5-2ft for Water-lilies, oxygenating plants and fish and the other 6-9in for marginal plants. Exceptions are some specialist water plants and certain fish such as Koi who like 5ft or more. --

## WAKE UP TO SPRING

### The Making of a Pond

The best site for a pool is one which is open and in full sun for eight hours a day or more in summer to encourage plants to flower well. The pool should be well away from deciduous trees, as leaves will contaminate the water.

The size and shape of the pool depends upon the area in which it is to be sited and, of course, the size of the purse! The larger the pool the better, is the general rule and, where fish are intended, at least 15 sq ft of surface area is needed — in fact, the average is around 60ft, even for modestly sized gardens.

Before starting to dig the site mark the shape using string, sand or garden hose and then look carefully to see if it is right in terms of shape, size, whether it can be viewed from vantage points etc. Experiment until you are sure you've got it right, before you start.

Water plants do not like sharp temperature changes so the central depth should always be deeper than 15in in small pools. For pools over 100sq ft in surface area the maximum depth may be increased to 2-3ft but this is about the deepest required. There is no proof that deeper water offers fish greater protection in winter.

Make pool sides steeply sloping (about 20 degrees from vertical) so there is the greatest volume of contained water in relation to surface areas. Vertical walls are difficult to construct and offer no shelving for plants.

Make a shelf 8 or 9in below the surface and 9-12in wide to accommodate marginal plants such as Water lilies or Arrowheads which like their roots in shallow water. The shelf may be continuous or interrupted and vary from half to two-thirds of the total pool perimeter. These two depths — shelf and main pool — will provide all the needs for plants, especially if the pool is to be planted with aquatics in containers.

Concrete as a material is not ideal, as construction is laborious and often disappointing as it is liable to fracture under stress from soil movement or ice expansion. Mixing and construction need to be done following strict instructions to avoid a weak pool with

little water-proofing. Concrete also contains free lime which plants and fish need to be protected from by painting the pool with a neutralising agent. Or, the lime can be leached out by repeatedly filling the pool and leaving for a week. The third filling should be almost lime-free and safe for plants and fish. Using Potassium permanganate to achieve this does not work.

Plastic materials do not suffer the drawbacks of concrete. The better types are easily handled and make pools with a greater expectation of life than most concrete pools. Polythene isn't very good as it is easily punctured and hard to repair.

Glass fibre is strong, rigid and has enough 'give' to take the pressure of ice expansion. Disadvantages are high cost and limited choice of designs.

Plastolene is a sandwich of Terylene net between layers of PVC, making a flexible sheet with great tensile strength while Polyvinylchloride (PVC) is sold in sheets and looks like polythene but is much stronger and thicker, so far superior.

Butyl rubber is a strong elastic material sold in sheets under various brand names. It is usually guaranteed to last 15 years but more likely will last up to 50. With all sheeting, there is no size limit and pools need no seasoning and can be stocked with plants and fish immediately.

To estimate the amount of sheeting needed, the length of the liner should be the overall length of the pool plus twice the maximum depth and the width

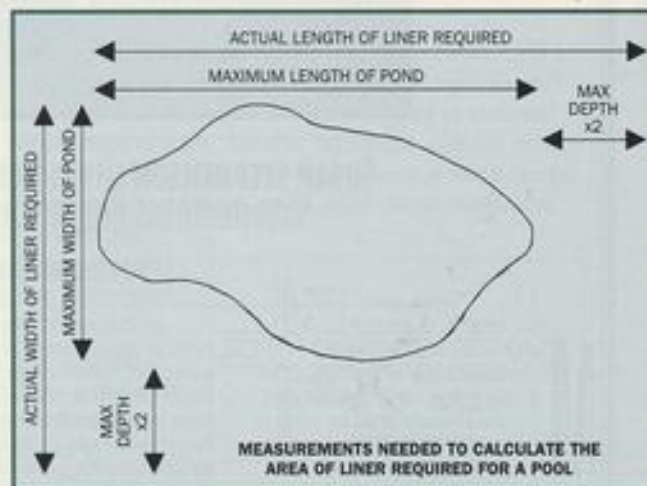
should be the overall width of the pool plus twice the maximum depth. A tip when using any liner is to put a 2in layer of sand or other suitable padding material (old carpets, newspapers) between the liner and the soil to protect the liner from sharp stones.

Fountains and waterfalls help oxygenate the water and cool it in hot weather. Water-lilies and other ornamentals like still water, so movement should be kept to a minimum. A trickle is just as pleasant as a torrent and less disturbing. A waterfall or fountain is usually fed by recirculating water from the pool itself so a pump is needed.

A pump may be a submersible type which stands in the pool completely submerged. A strainer prevents fish being sucked in and plant debris from damaging it. It has a waterproof cable sealed into the pump, long enough to reach out of the water. A weatherproof connector joins this to another cable connected to the nearest electricity source.

For larger ponds or multi-outlets, it is usually more economical to use a surface pump housed outside the pool in a weatherproof container. Water drawn from the pool to the pump is delivered to the fountain or waterfall through polythene delivery pipes. Always choose pumps or waterfalls suitable for the size and depth of your pond, don't just buy a pump on the basic calculation of volume of water to be moved per hour (once every two hours is adequate) but bear in mind how high the water has to be lifted, and allow for resistance offered by long pipework and dirty filters too!

Any feature requiring wiring should be installed by a qualified electrician. Mains voltage can be stepped down through a transformer to a lower AC voltage or very low DC, limiting the shock if an accident



#### PREVIOUS PAGE

A pond constructed using a butyl rubber liner.



## WAKE UP TO SPRING

### *The Making of a Pond*



Almost finished! Pond built into wall using concrete.

does happen but a circuit breaker, rated for personal protection, is recommended with any electrical equipment used near or in the pool.

Fish do not die of cold in winter, but can suffocate from the build up of toxic gases trapped beneath surface ice, so a small immersion heater is a good investment. This is suspended from a float which keeps a hole open in the ice even in the severest weather.

You do not have to limit your pool site to flat areas. Pools can be constructed in walls or as descending levels in a slope; they can be made individual by design (formal, informal, symmetrical or not), and in shape (round, square, rhomboid, bit of both); the surroundings (grass, evergreens in tubs, concrete, gravel etc), and individual touches (fountains, waterfalls, bridges, constructions in the

pool, statues, seating areas, even railway sleepers used to make the walls) are all other variables you may wish to consider. Ponds may be raised to meet special needs, such as disabled pondkeepers, or at sited in the ground itself. The scope is only limited by the imagination so long as the basic principals of not siting under trees or in shade are followed and the construction materials and methods are sound.

If plant life seems to fail to thrive in the pool, or where large numbers of fish are to be kept, some kind of filtration will be needed to keep the water clear. A filter removes visible wastes, such as faeces and debris, and invisible contaminants such as ammonia and carbon dioxide which encourage algae. Filters are a better long-term algae control than algicides.

There are two basic types of filter — in-pond and external. In-pond filters are

often in the form of a kit attachment to a pump inlet that also drives a fountain or waterfall. They are easy to install but less efficient than external filters and can be prone to clogging unless regularly maintained.

External filters are either gravity-fed or elevated. Gravity filters (sited in the ground alongside the pond) have the water drawn through the filter medium (by a pump housed after the filter chamber) causing efficient straining of debris while elevated filters, sited above pool level, have water pumped to them from a pump in the pond usually via a spraybar above the filter medium which increases aeration. Filtration itself is either mechanical or biological. Mechanical filtration involves debris in a medium which may be brushes, foam, sand, gravel or aggregates and biological filters contain bacteria which breed on special media (usually plastic coils, or similar material, offering a vast surface area) and convert the wastes dissolved in the water to less toxic materials. If filtration is required, advice should be obtained, before installation, as to which type is best for your pool. The latest filtration aid is the Ultra-violet lamp which, in association with the filter, helps to keep the pond clear of that seasonal eyesore, green water.

There are many things to be considered when planning a pool but, whether yours is to be a simple small pool or the grandest construction with many ornaments and fountains, it will bring the joy of water to the garden which, on any scale, is a delight.

### **FLEET WATER GARDENS**

FLEET HARGATE, SPALDING, LINCOLNSHIRE

Tropical and Coldwater Fish, Plants, Pumps, Pools, Liners, Filters, UV's, Food, Aquariums, Garden and Fountain Ornaments, etc.

**PLUS ALL YOUR POND REQUIREMENTS**

*Large Discount available on selected items*

10.00am-6.00pm 7 days a week

Telephone 01406 425512

### **NAUTILUS AQUATICS**

FULL RANGE OF PONDS, PUMPS, FOUNTAINS, WATERFALLS AND ALL VARIETIES OF POND FISH, PLANTS AND LILIES WILL BE AVAILABLE FROM EASTER

*All you need for the garden pool at sensible prices*

**OPEN 7 DAYS A WEEK**

SPRING GREEN NURSERIES, PONTEFRAC T ROAD, CROFTON, WAKEFIELD WF4 1LW  
TEL: 01924 864779. FAX: 01924 865272

WAKE UP TO SPRING

# Creating A Wildlife Pond



A fine display of well-contrasted marginal plants around a charming natural pool in late spring. The double-flowered kingcup, *Caltha palustris flore plene*, is prominent in the foreground.

PHOTO: A&P LIBRARY

---

**DEREK LAMBERT** GIVES FISH A MISS FOR ONCE AND  
CREATES A WILD POND FOR AMPHIBIANS AND WILDLIFE.

---

Not long after I moved to my new house a few years ago, the farmer who had the land directly behind our garden started to fill in an old natural pond which contained a colony of newts. Since there was no other natural pond within reasonable distance and none of our neighbours had a garden pond, we decided to build a wildlife pond to replace the one lost and give the newts a new home.

This was not a new endeavour to me since I had had a garden pond from when I was about 10 years old, but what was new was the deliberate intention of attracting wildlife into this artificial environment. First of all I decided not to include any fish in the pond. This meant that I could safely ignore filtration and concentrate on creating as natural a still water pond as possible.

Looking through my vast collection of photographs of natural ponds it was clear that natural ponds do not have clear cut borders where the water ends and dry land begins. Rather they have a marshy area thick with growing plants bridging the gap between water and dry land. This area allows amphibians easy access into and out of the pond. None of the fibreglass ponds I saw on sale could be used to create such an area and since I had never done anything with concrete other than walk on it, I decided to use a Butyl pond liner to make my pond with.

The area where I decided to site the pond was towards the back of the garden in what had once been a vegetable plot. At the time I started work on it there was an incinerator standing in the middle, a pile of ashes but nothing else except the start of a weed patch. First of all I marked out the shape of the pond with string tied to small canes. The hole

was then dug out. This took many hours of back-breaking work since it needed to be at least a foot deep in one area and about 18in throughout the rest. This water depth prevents the pond freezing solid so pond life can over-winter safely on the bottom no matter how harsh the winter is.

Once the hole had been dug I carefully removed all sharp stones and then covered the bottom and sides with old carpet. Having just moved we had plenty of this but a layer of sand could also be used. To create the natural marshy area the back and sides were dug out about 6in deep for an extra foot or so, with a wall several inches higher left where the pond proper would start. The liner was laid both in the pond itself and through the marsh area finishing 6in outside this. Soil was then piled over the liner into the marsh area creating a natural looking slope into the pond.

The bottom was then covered with several inches of soil to create a natural substrate for oxygenating plants to grow in. In a normal pond, where fish are going to be introduced, this is not a good idea as the plants tend to run riot and clog the pond, but in a natural pond this is exactly the environment you want to create.

Now the basic infrastructure had been created, the pond could be filled. A hose was used to do this and by the time the pond was full the water looked very murky indeed. This was due to the soil but after a day or two it settled out again and I could see to the bottom. Oxygenating plants were then planted into the substrate and water-lilies in planters added. A selection of bog plants were purchased and planted

directly into the marsh area.

Everything looked lovely for a week and then the water turned green. Now many water gardeners have an absolute fit when their pond turns a murky green but this is just part of the natural process of maturation. It will not harm the pond life or even fish and as the oxygenating plants start to grow and the water lilies spread their leaves over much of the surface, the water clears and remains clear from then on. A quicker solution to green water in a natural pond where there are no fish, is to introduce a quantity of *Daphnia*. This tiny crustacea eats algae and will clear the green pond water in less than a week. Chemicals can also be used but these only work temporarily and may harm the other wildlife in the pond.

With a wildlife pond the area adjacent to it is very important because many amphibians need places to hibernate, they often feed on land as well. The usual practice recommended in most water gardening books is to create a rockery next to the pond with lots of small caves and crevices for the amphibians to hide in. What, however, struck me about all my photographs of natural ponds was the lack of any rockery type land near by. So where did the amphibians normally hibernate? It seems most spend the winter tucked up in thick plant growth and dead leaves in damp areas near the pond.

So instead of a rockery I decided to plant a thick shrubbery. Grasses and ground cover plants would be used to cover the spaces between the shrubs and this whole area would lead naturally into the overgrown marshy area. Since I could only afford small plants to start with, I filled in with summer bedding and planted a few cheap quick growing fillers to create a few sizable havens by the first winter. *Lavatera* and *Baldonia* were useful for this and were not cut back until Spring was well underway the next year. The other important difference to managing this area from normal gardening practice, was not to clear the ground of dead leaves and debris in the autumn. This 'garbage' was left until late spring or early summer and provided the perfect winter home for all manner of wildlife. On the *Baldonia* stalks huge numbers of



Shortly after completion and the rushes are already beginning to take over. The water level has been lowered to show the wall used to hold the earth back on the marsh area. PHOTO: D. CAMBERG

## WAKE UP TO SPRING *Creating a Wildlife Pond*

Ladybirds overwintered and all manner of other insects could be found in the leaf litter.

Within a few weeks of my pond being set up the Newts had found a new home and I now have a sizeable breeding colony of them. All kinds of other wildlife have also moved in over the last few years and exotic looking Dragonflies can often be seen swooping over the water. My water-lilies provide a wonderful display during the summer

and many of the bog plants flower. The oxygenating plants have really taken hold and every so often have to be reduced by pulling great chunks of them out. The bog plants I wished I had never

introduced are some of the Rushes. The only way I have found of reducing them is by removing a chunk of the marsh area and replacing the soil with fresh. Apart from this, the only maintenance I have to

do is remove the dead water-lily leaves in the autumn and keep the pond topped up during dry spells. Nature takes care of the rest.



A year on and the shrubs are beginning to fill in. The area to the left of the pond is ideal for amphibians to hide in.

PHOTO: D. LAMBERT

### NEW SEQUENCE 1000 POND PUMPS



For very low running costs the Sequence range are the ideal surface mounted pumps.

With the 1/4 H.P. capable of pumping 2900 Gallons per hour and using just 280 watts, savings on electricity could pay for the pump in months.

For further details please contact:

**W J Furse & Co Ltd, Wilford Road, Nottingham,  
NG2 1EB**

**Tel: 0115 986 3471**

**Fax: 0115 986 0538**



## Hollybush Aquatics

WARSTONE ROAD, SHARESILL,  
WOLVERHAMPTON  
**Telephone: 01922 418050**

Hollybush Aquatics is a purpose built Aquatic Centre housed all under cover in over 15,000 sq ft. Part of a 12 acre garden centre site, conveniently located only 500 yards from J11 M6. You'll be amazed at our range of livestock, including coldwater, tropical and marine fish; all quarantined and displayed in over 240 tanks. We have an unbeatable display of dry goods and foods inc frozen and live. Aquariums and cabinets from most major suppliers at unbelievably low prices. Visit our pond section, again all under cover, with a terrific range to cater from goldfish bowls to the most discerning Koi keeper. For a family day out, pay us a visit. You will not be disappointed.

**COFFEE SHOP AND RESTAURANT  
OPEN 7 DAYS A WEEK**



Mon-Sat 9.00am-5.30pm  
Sun 10.15am-4.15pm



## WAKE UP TO SPRING

# Invasion of the Frogs

**W**e were expecting an invasion of frogs. They would have nowhere to lay their spawn unless we acted quickly. There was already one egg-bound frog hiding under the grass-collection box (from an old lawnmower), in which we had raised tadpoles for a few years. Some of these had been rescued from a puddle on a building site behind us, where a desperate frog had laid her brood after finding the pond had disappeared. The puddle was sure to dry up and we collected as many tadpoles as we could. They would now grow up and may be coming back. Also the neighbours' frogs would be looking for a new home as their had recently been filled in. We had enjoyed hearing the croaking chorus next door to let us know that spring was coming. And it was always a pleasure, after the initial fright, when a frog jumped out of the undergrowth and sat still, looking at you with those friendly bulging eyes.

### FROG'S RESPONSE

At the beginning of March, we went to the local garden centre and chose a small pre-moulded plastic pond with

**LYNDA OSBORNE RECOUNTS THE STORY 'THE FROG, HE WOULD A "WOODING GO' ... IN A LAWN-MOWER GRASSBOX'**

• PHOTOGRAPHS BY THE AUTHOR •



An evening chat between two frogs by the pool side.

plenty of ledges for tadpoles to rest on and easy for frogs to climb out of. When we arrived home a pair of frogs, unable to wait, had already laid some spawn in

the grass-collection box that morning. We quickly dug a hole and put the pond in at the foot of the rocky. It was then filled with water from the rain barrel and the tap. We added oxygenating weed and a few pond snails to keep the water clean and healthy. For the following week frogs came every day. But did they use the new pond? No. They crowded into the grass-box! It was soon overflowing with frogs and spawn. At one time I counted thirteen frog couples in, and next to, the grass-box, ignoring the bigger pond nearby.

### TADPOLE TAKEOVER

I carefully moved the spawn down to the pond and even carried some frogs down there.

When the spawn is laid it is a tight cluster of black dots. Then the water swells the jelly round them until each egg is rather like a translucent eye with a black pupil. Soon the whole pond was a huge tapioca pudding. Over the next few weeks, the eggs changed into little tadpoles and they started swimming in the pool. When the sun came out the top of the pond became a seething mass of black, shiny, wriggling bodies. They were fascinating. They darted about with so much energy and enthusiasm. At first they appeared



The pond was constructed to complement the rockery.

friendly and easy to catch, but as their eyes developed they darted away from you. We did wonder sometimes whether we had disturbed the balance of nature as there were hardly any predators to reduce the numbers. No fish in the pond and only a few diving beetles later on. The cat didn't seem interested in a self-service fresh fishy dinner, but the dog may have drunk a few! She was very impressed with this large new drinking bowl. Quite a number of times the children kicked a ball into the pond, with a resultant splash, and fountain of tadpoles leaving the pond. It was then a hunt, and rescue operation with a spoon, to lift them back to safety.

### POND FEATURE

The addition of a water feature was good to see in the garden. The shiny reflection drew the eye to the foot of the rockery. The tadpoles also helped to make the pond an attraction. When they were swimming up for air and diving down again, the top of the pond became completely covered in tiny bubbles which made a popping sound.

In sunny weather, when they were all swimming on the top of the pond, the water turned round in an anti-clockwise direction. There was always something to look at in this moving, changing water world.

### HUNGRY MOUTHS

We fed the tadpoles with goldfish food and bread. You could watch the bread disappear before your eyes as an army of tadpoles converged on it and began chomping away. It became apparent that they were ready to move on to meat when we saw them eating up the pond snails. We then started throwing slugs and garden snails into the pond. They sucked away on this feast and they seemed to prefer the snails. If we put a finger in the pond they would suck on that too. Next the pond plants stopped growing larger and began to get smaller as they ate those up. It seemed difficult to satisfy such a large hungry brood and I thought I knew how the birds felt feeding their ever-open-mouthed nestlings.

### FROGS ABUNDANT

It was exciting to see the black tadpoles develop into little brown frogs and start to leave the pond. However, there wasn't much shelter and the sun was very hot. We found some enthusiastic sunbathers shrivelled up on the rocks beside the pond. So we put up temporary shelter with boards, until the plants around the pond should grow large enough to provide cover. Soon many were turning into tiny Frogs, resting on ledges in the pond or

exploring the garden. Towards the end of their stay, they had eaten up all the plants in the pond and quickly polished off any replacements I put in. The late-developers then had a water pollution problem, because there were no oxygenating plants or pond snails to keep the water clean. I now had the task of emptying the pond and re-filling it with fresh water on a weekly basis, until all the froglets had left home. We used a kitchen sieve to separate the tadpoles from the dirty water taken out of the pond.

### FISH TAKEOVER

Once they had gone, we restocked the pond with plants and pond snails and when a healthy balance had been established, we bought my daughter two goldfish. They swam away and hid when we went near the pond but hopefully might become tame when they realise where their food is coming from! It is quite possible that the amorous frogs will grab the fish next year, but we will be ready to take the fish out of the pond whilst the Frogs are breeding. Perhaps the fish will help to keep down the numbers when we put them back in the pond with the frog-spawn. I wonder how many frogs will come back in a few years time when the froglets are mature? Will it mean another trip down to the garden centre for a much bigger pond?

## WAKE UP TO SPRING *Invasion of the Frogs*



The goldfish were put in the pond after the froglets had left.

### FROG FACTS

- 1. SURVIVAL.** Common frogs often lay between 1,500-3,000 eggs. It has been estimated that out of every 2,000 eggs laid only about five will survive to become adult frogs. Predators of tadpoles are fish, newts, birds, water shrews, water beetles, water boatmen, dragonfly nymphs and other insects. It takes about 12 weeks for a tadpole to grow into a frog. Frogs also have many predators such as pike, grass snakes, seagulls, herons, owls, crows, weasels, stoats, otters, rats, hedgehogs, foxes and domestic cats.
- 2. DIET.** Tadpoles can live and grow

exclusively on plants if necessary. Their main source of nourishment in the wild is algae and single-celled animals (protozoa). However, if they come across 'meat' they will eat it. Frogs do not eat vegetables. Their diet consists of slugs, snails, butterflies, moths, beetles, flies, bugs, ants, woodlice, and other insects.

- 3. SENSES.** The most important sense for a frog is its good eyesight. When they go under water their eyes are covered with a transparent membrane which protects them. Hearing is especially useful at breeding time. A frog's ears are the circles which can be seen in the brown

patches behind its eyes.

- 4. HIBERNATION.** Female and immature frogs overwinter on land in sheltered places such as under old logs or in stone walls. In contrast, most male frogs return to the water and lie dormant in the mud at the bottom of the pond. They are able to breathe through their skin.

- 5. LIFE EXPECTANCY.** Common frogs have been kept for 12 years in captivity, but in the wild not many would survive that long. It is possible to tell the age of a frog by its bones as they have growth rings. A new ring is laid down every year when the animal goes into hibernation.

# GRAFTY

BLAGDON OFFERS

**HYDRO POND 3 2500 LTR PER HOUR PUMP**

RRP £74.95. SPECIAL GRAFTY PRICE **£59.96**

PONDALENE POND LINER. 12 YR GUARANTEE.  
ONLY £1.87 SQ M (APPROX 18p SQ FT)

FIND US AT JUNCTION 8 M20.

FOLLOW SIGNS FOR LENHAM & GRAFTY GREEN

TEL: MAIDSTONE 01622 858800

## DECORATE YOUR GARDEN

Enjoy making your own garden and patio ornaments, or turn a great hobby into a fantastic money spinner. From ornamental bird tables and statues to "feature pieces" for fountains, ponds and water gardens. Each mould can be used again and again, using plaster, resin or cement.

For hundreds of inspiring ideas send £2 now for our superb catalogue. With over 1000 moulds to choose from - you will be spoilt for choice.

Europacraft, PREPOST, Dept. No. WG2576  
Hull, HU5 5BR. (No stamp required)



# BRING A SMILE TO YOUR POND!



*This pond is a mess! Green water, unappetizing food, I feel ill... why don't our keepers DO something about it?*

## CHEER UP!

*They're sending a water sample to AQUA Company for analysis and ideas for improvements...*

*...then they'll get rid of the green algae bloom with O'CLEAR, safely and quickly...*

*...and to get us fit after the long hard winter,*

*they're ordering top quality food — AQUA FEAST and AQUA DAPHNIA.*



**TELEPHONE  
HOTLINE  
(01252) 712307**

**ONLY BY  
MAIL ORDER  
FROM**

**AQUA  
COMPANY LTD**

Dept AP6M  
Abbott House  
14a Hale Road  
Farnham GU9 9QH

## HEALTHY PONDS FOR HAPPY FISH



ALGAE BLOOM BEFORE  
O'CLEAR TREATMENT

### How can you tell if your pondwater is fit for your fish to live in?

By the time Spring arrives, the water in the pond has undergone many changes. All winter long, it will have lain around idly soaking up any nutrient, pollutant or other contamination left 'in soak' since last autumn, the amount of these leftovers being in indirect proportion to the amount of conscientious maintenance done by the pond's owner. In addition, its actual structure will have also undergone fundamental changes too, ranging from liquid to solid and back again as the temperature fell and rose again.

So now we have a pond containing something of whose condition we know very little but rely on to continue to be the 'atmosphere' in which our fishes and aquatic plants are

## SPRING WATER

expected to look their very best for the next six months or so. Now, if that's not an act of faith then it would be interesting to know what is.

Is there anything that can be done to assess the water's ability to sustain life? Is it time we invented an MOT Test for water? Experienced aquarists may be fortunate in knowing how to carry out diagnostic tests on their water (and equally clever in analysing the results and taking the correct remedial measures too, if necessary) but what about the rest of us who might not be so acquainted with the facts of water life?

Last year, an enterprising Company came out with the simple idea of offering a postal analytical service on water samples. However, this was not to be just a 'this is what's wrong with your water' reply service but one which, through a detailed questionnaire, helped the 'sufferer' to recognise why the water was below par (if, indeed that proved to be the case). Naturally, quite a large proportion of samples were connected with the two main summer water 'plagues' — green water and blanketweed

— although some enquiries were more concerned with drinking water qualities (maybe a cat or dog complained about funny-tasting pond water?).

The questionnaire asks quite searching questions, both about the pond's physical make-up — size, shape, depth, colour and silt — and its upkeep — how it is topped up, whether aquatic fertilisers are used, what falls into it, its aquatic plant content, how often silt is removed — and so on. Additionally, its inhabitants are taken into consideration too — fish, visiting wildfowl — as is the filtration system. For the technically-minded, the tests done on the water include those for pH, Ammonia, Nitrites, Nitrate and Phosphates; the resulting report can well run to three pages with both Major Findings and Recommended Remedial Actions included.

As a consequence, pondkeepers find themselves in the happy position of knowing their ponds better and achieving a higher understanding of what makes their pond tick (as well as what doesn't!). Non-fishkeeping pond-owners (Golf Clubs and Municipal Parks, for instance)



AFTER TREATMENT  
WITH O'CLEAR

can also make good use of the service.

The analytical service begins with the reception of a sample (not less than 10 fluid ounces, 300ml) of pond water at the Company's laboratory and the results should be back with the pondkeeper within 14 days. A fee of approximately £13.50 is charged for the service but, when taken into consideration against the incalculable amount of satisfaction likely to be obtained by having a pond in optimum condition throughout the summer (and beyond), this is surely a good investment; where else could you buy peace of mind for less?

**Details of the Water and Pond Analysis Service can be obtained by writing to: AQUA COMPANY, Abbott House, 14a Hale Road, Farnham, Surrey GU9 9QH. (Tel: 01252 712307. Fax: 01252 712308).**



## WAKE UP TO SPRING

# Pump Up the Action!

The humble submersible is more than just a pump. It's the invisible engine that drives the life support of your pond and for your fish. Unfortunately, 'out of sight' becomes too often 'out of mind' but it's vital that you spend the time to check it over.

If you turned off your circulation system over the winter (or if you didn't, for that matter), there are a few things you should do with your submersible NOW before Spring arrives — and it is coming now, sooner than you think.

If you DID shut down your system and remove the pump during winter then you should have stored it so that the motor seal stayed wet. Somewhere frost-free — in a bucket with a few inches of water in the bottom perhaps? If you left it in the pond, then the following comments still apply (but PLEASE don't drag the thing out of the pond by the cable, use the handle or lift it by the fountain head).

First UNPLUG THE PUMP for safety's sake, remove the outlet hoesail (or fountainhead and 'T' piece) and look inside. Are there any obvious bits of rubbish in view (just waiting to jam the motor), twigs, grit, clumps of weed twisted around the impeller? It's remarkable what can get through the apparently tiny intake holes.

After REALLY MAKING SURE THE PUMP IS UNPLUGGED use your finger to turn the impeller — you can usually reach the edge of it. Does it move freely, without any stickiness or friction? Even the new ceramic shafts sometimes allow

**DAVID BROWN BREATHES LIFE INTO YOUR EXISTING PUMP OR, IF NEEDS BE, ADVISES HOW TO MAKE THE CORRECT CHOICE WHEN BUYING A NEW ONE.**



PHOTO: ASP LIBRARY

the motor shaft to 'freeze' onto the seal, especially if it has been left dry for a long while, so when you start the pump again the sealing ring can get torn or damaged. If it sticks, get rid of it fast — it'll only break down when you least expect it! Give the pump body a good wash out, it's simple to put your garden hose in through the hoesail entry point and flush out the last grains of sand, or anything else that may be lodged above the impeller out of sight. So pumps can be taken apart by a simple bayonet-type twisting action, in order to get to the impeller chamber; this makes things a lot more easy — and don't forget to deslime the magnet from accumulations of

food proteins!

If you use a three-pin plug on the business end, this needs checking out too. Take off the top and make sure all the connections are all tight (and dry!) and put it back together again with a spray of silicone or WD40. Although many of the submersibles these days come complete with a moulded plug as

standard, there are better

ways of doing the job. Give some serious thought to permanently wiring the pump into a dedicated safety, and switchable, point with its own safety trip and fuse — better than any plug and socket arrangement.

Check the cable — if you can, leave it in some warm water, or lay in the warm sun(!), for an hour or two until it is nice and flexible then look at every inch of its length. Are there any tiny cuts in the covering? Any signs of abrasions or perishing? Even the

tiniest break in the insulation means it's past the safety 'sell-by' date. If in doubt, get it checked by an aquatic dealer you can trust or a qualified electrician. Make sure he knows that you intend to leave the cable in water day and night for the next six or eight months. If you have the slightest doubt, throw the pump away and buy a new one.

Speak to your electrician again and make sure you fitted a PROPER safety device — not just a 'pop-out' fuse. You need a good quality RCD or Residual Current Device (sometimes called an RCCB just to confuse us all); they tell me these work by comparing the amount of the current flowing down the positive

cable against that coming back up the neutral and if the two don't balance, then the system assumes there is a short circuit or connection to earth and turns it off. Be warned though, the RCD depends on there being a three wire earthed system and some of the older, smaller pumps do not have an earth so even the best RCD won't work. In this case, the answer may well be a suitable thermal trip — again speak to your electrician. Modern equipment (including lawnmowers and strimmers) are double-insulated and have only two wires; these work with RCDs quite successfully.

Electricity and water don't mix at all well and, quite simply, will kill you, your children, pets and fish without a moment's hesitation. A new pump isn't cheap but try to put the financial outlay into perspective — how much did you pay for the last sizeable Koi you bought? How much is your family's safety worth?

### NEED A NEW PUMP? WHICH ONE TO CHOOSE?

As often as not, the choice between the two types of pump — submersible or surface — is going to be dictated by the existing layout of your pond and filtration system. In general, submersibles are going to be cheaper to buy and easier to install. The disadvantages are that they are more difficult to clean, contain virtually no parts that can be repaired and usually move smaller quantities of water, being suitable only for the smaller pond. Much above 7,500 gallons (a pond 20x20x3ft deep) and the common submersible will not produce enough flow.

But, before you run down to your aquatic dealer with your money in your hand, you will need to sit down and make a list of things you need to consider.

### HOW FAST?

Normal pond filtration systems need to turn over the pond up to once every two hours as a Rule of Thumb. So, work out the capacity of your pond, divide it by two and this is the water flow rate your pump need to produce IN THE PLACE YOU PUT IT. (Note: the arithmetic works the same for both gallons and litres, just remember to look for the appropriate gallons/hour or litres/hour rate on the pump specification.)

### HOW FAR?

If you are pumping water through an external filter, or over a waterfall, then

how far is it from the pond? The further from the pump the more flow rate you lose through simple friction; again, the smaller diameter the pipe, the greater the friction and more loss.

### HOW HIGH?

Pumps work by lifting water, normally expressed as feet (or metres) of static 'head'. Nothing complicated, this is just the distance between the surface of the pond (NOT where the pump sits if it is a submersible) and the top of the waterfall or filter input. So, if your pond water surface is one foot below ground level and you are feeding a waterfall four feet above ground level then your pumping head is five feet static. This factor makes a very significant difference to the performance of the pump.

### HOW MUCH?

Expect to find submersible (mains or low voltage) rather cheaper than surface models to buy but having a shorter working life. Running costs will be similar for the same amount of water (except for one or two notoriously inefficient models) but will be directly related to the volume of water they move. You WILL notice the difference in your electricity bill when you install a pond pump whatever they tell you and, needless to say, it's not a reduction! But just compare this cost to the price of a pint or two of beer, or glasses of wine, and balance that against the huge enjoyment value, and satisfaction, you get from your pond all year round. Most of us think it well worthwhile.

### WORKING IT OUT

If you are a beginner, here is an example based upon one brand of well-known submersible pump and a pond 10x10x2ft deep. (The sums are the same for a surface pump).

### HOW FAST?

The pond capacity is 200 cubic feet (10x10x2) multiply by 6 (or 6.25 if you want super accuracy) which gives say, 1,200 gallons. For filtration and general pond health the pump should turn over 600 gallons per hour (1,200 divided by 2).

(Metric equivalents: Pond: 300x300x60cm = 5,400,000ccs = 5,400 litres. Pump rate = 2,700 litres per hour) Easy so far.

### HOW FAR?

The filter is 18ft from the pond and the pipework is 1/2in. Checking the Tables (I

cheated and got someone else to do it for me!) revealed that the amount of pipework loses the equivalent of five feet head of water, so this needs to be included in the sums.

### HOW HIGH?

The top of my filter is five feet above the water level in the pond; now five feet of static 'head' to consider.

### THE SUMS

Water flow required is 600 gallons per hour — conveniently 10 gallons a minute (I worked that out on my own!)

Total head of water to be overcome is five feet (pipework losses) plus five feet static head = 10ft.

I need a pump which produces AT LEAST 10 gallons a minute at a 10ft head.

(Don't forget that this is the ideal performance, one that is likely to be diminished further — once the water flow has to force its way through dirty filter media!)

### THE PURCHASE

The range of submersibles I was interested in covers two sizes — 250 watts and 350 watts. Each box has a handy little graph showing that the 250 watt model manages 12 gallons per minute at a 10ft head, just about enough. The 350 watt gives 17 gallons per hour, more than I need and more costly to run — so guess which one I will be choosing?

### CONCLUSION

The particular pump I chose, by the way, is generally quoted as producing 1,500 gallons per hour or 25 gallons per minute. This figure, of course, just refers to the amount of water coming out of the end of the pump when it is bench-tested and not connected to anything else. So, the 1500 number is a bit of a pointless number in itself; similarly, it's equally pointless asking your dealer for a pump which produces 10 gallons per minute if you don't tell him the rest of the equation as to how the pump is to be used. If he doesn't know what you are talking about then go to a different dealer — one who understands his trade, and his ponds.

WE ARE GRATEFUL TO  
FIRST PUMPS FOR ASSISTANCE  
IN THE PRODUCTION OF  
THIS ARTICLE

## SOUTH EAST WATER GARDENS

### THE LARGEST WATER GARDEN CENTRE IN THE SOUTH EAST

EVERYTHING FOR THE WATER GARDEN ENTHUSIAST  
EXTENSIVE DISPLAYS OF PONDS & WATER GARDENS

EXCELLENT SELECTION OF:

- TROPICAL FISH & AQUARIUMS
- PONDS, PUMPS, POND LINERS & ACCESSORIES
- COLDWATER FISH
- FISH MEDICAL SUPPLIES
- BIRDS, PETS, FOODS & ACCESSORIES
- FILTERS, UVs, PLANTS

SOUTH EAST KENT'S ONLY SUPPLIER OF



GARDEN ORNAMENTS & FOUNTAINS AVAILABLE IMMEDIATELY



FROM STOCK & FROM OUR EXTENSIVE CATALOGUE  
HELPFUL ADVICE ALWAYS AVAILABLE FROM OUR FRIENDLY STAFF

**SANDWICH**  
**(01304) 614963**

OPEN 6 DAYS TUES-SUN 10AM-5.30PM  
BELLERS BUSH, SANDWICH, KENT



## Valley AQUATICS

- We are the largest stockholders of JAPANESE KOI in the country
- Everything for the water-garden, liners, pumps, filtration systems, plants, etc
- Tropical, Marine and coldwater fish
- All accessories for indoor and outdoor tanks and ponds
- Helpful advice freely given

COME & SEE OUR  
DISPLAY AREA, WITH ITS  
1800 GALLON GLASS AQUARIUM

**BARRY AND LINDA PRICE**

Plantation House (Carrs Ind Estate),  
Flip Road, Haslingden, Lancashire BB4 5EJ  
Telephone: Rossendale (01706 228960/224370)

Open 5 days  
a week  
10am-6pm  
CLOSED  
TUESDAY  
& WEDNESDAY

## The Rocky Road to Success

*Use stonework to add new dimensions to the pond*

**T**here is no getting away from it, ponds are flat and no amount of water movement in a horizontal plane will help (unless it's a hot-tub on the patio!). However, with any rise in ground level around the pond, things begin to perk up and extending the water away from the pond becomes more practicable. Moving water not only looks good and sounds good, it also does the pond good too (allowing for some exceptions like water-current hating Water-lilies) by bringing in aerated water and preventing areas of the pond from stagnating.

Nowadays you don't have to go around looking for natural stones, nor do you need to assemble waterfalls, cascades and water-courses from scratch. Readymade, ready-to-go, pre-formed units are available which, once weathered in, can look deceptively like the real thing.

Leading the way in this field are **ROCKWAYS**, the Chelmsford-based company who first pioneered their Original Cascades a few years ago. Made from glass-reinforced concrete, the Top Pond, Left and Right Curves, Medium Step, Large Drop, Rapid River and Large Pool units allow for a diverse choice of arrangements to be built up to suit the lie of any

pondside land.

The Modular Stone Cascades will blend in with real York Stone (a slate grey version is also an option) and whilst they comprise some of the smallest units they are some of the most interesting to work with: Wedge, Shelf, Straight, Spread, Tiered and Triangular. Left and Right Bends again can be combined in almost any pattern with the wide lips of the pieces allowing that most attractive sheet of water to fall to the layer beneath. A Modular Drop Section and a Modular Small Left Curve have been added to the range for 1996.

Easily bedded down together with a little mortar, it is usual to fit an underlay of pondliner beneath these two ranges to ensure that any splashed water finds its way back to the pond.

The Superior Range simplifies installation even further — the units not only interlock for perfect assembly and location but they are totally leakproof — up to 2,000 gallons per hour can be transmitted along them without any spillage. The units in this range are the largest in the range of water courses and come in grey Westmoreland stone and 'algae-green' finishes for that authentic, 'it's been here years' look.

Many of the units come with double outlet features; no more predictable 'you can see where the water's coming from' water jets, water can just as easily flow round the rocks than through the channels.

Don't assume that these units are only designed for the larger pond or garden. Two new ideas for 1996 include integrated units especially made for the small garden or even a patio area. The Woodland feature includes three Bark effect cascades and two Small Tree Stumps whilst (again getting back to heightening effects) the three-tier self-contained water feature incorporates two Module S-Bends, one Double Outlet Cascade, a free-standing Pond, a Rock Spacer Section and a Double Outlet Support Wall.

It goes without saying that all units are guaranteed frost-free and the company's expanding designs (Millstones, Branch Water Feature, Filter Box Fascia Waterfall, Three-Tiered Modular Waterfall and Modular Tiered Drilled Rock Feature) are being increasingly seen in Europe as well as being countrywide available (at garden centres) throughout the UK.

**Rockways can be reached (for details of nearest stockists) on: Tel: 01787 477298. Fax: 01787 478333.**

## WAKE UP TO SPRING

# Ponds and Trees DO Mix!



Pond view shows Bonsai 'benched' along pond edge

PHOTO: AMP LIBRARY

### STAN BUDDIN PROVES THAT SOME TREES CAN MAKE ALL THE DIFFERENCE TO A POND.

To some people, March could be considered as the most exciting time of the year. This applies to gardeners and pondkeepers alike: gardeners are busy in their greenhouses planting seeds and waking up their Fuchsias and Geranium plants; pondkeepers, outside temperatures permitting, will be out working around their ponds, checking the filters, clearing the debris from the vegetable filters where they will soon be growing Watercress and Parrots Feathers amongst other aquatic plants. The Koi keeper with an unheated pond will be checking the temperature of the water daily, waiting for it to rise high

enough to start feeding but, while waiting for the pond temperature to rise, will also be checking the pond decorations, and I don't mean Fairy Lights or Christmas decorations, but plants.

Plants, in one form or another, complement the pond and garden, making the two separate components one. There are many plants one could use for this purpose: Summer bedding plants grown from seed or purchased from your local nursery, these would include the ever popular Fuchsia and the old favourite, the Geranium, which, I will add, will stand up to much drier conditions than some other plants.

Of course I know all about the detrimental effect that many trees have on the pond with their invasive, penetrating roots, poisonous leaves and berries. Water-lily growth deterring-shade and, it goes without saying, all those leaves to net out each autumn! So, what am I advocating putting trees around a pond for?

Well, my sort of trees are used for a far different purpose: I wanted them there in their own right, to add character to my pond, and especially to add to the authenticity of the whole pond scene. By now, I expect you've guessed what I'm going to talk about (either that, or else you've looked ahead at the pictures!) —

yes, it's Bonsai — the art of miniaturising trees and shrubs. Adding these to the pond surrounds not only adds extra attractions but re-affirms the style of the whole scene — yes, I keep Koi as well!

## WHY BONSAI?

The big advantage of Bonsai in this context is, apart from lending a further Japanese flavour to the scene, that it is so manageable — you are in charge of things right from the start. You can develop and train the trees to just the right shape and size that you want (in theory that is, the practice is often a little more difficult and time-consuming!). Because of this 'scalability', Bonsai makes the ideal addition to any suitably-themed water-garden from the largest right down to the smallest patio feature.

Bonsai can be an all-round pond decoration, but do not like HOT or DRY conditions. If you have taken the time and trouble to raise your Bonsai tree from seed and spent, say, five or ten years nurturing it, it would be foolish to have it perish. On the other hand, you may not have taken the trouble or had the time to raise your Bonsai tree from seed, but taken the 'short cut' and gone to a Bonsai nursery and paid a tidy sum of money for them. In this case, if you did not look after them I would think you have more money than sense!

Koi keepers display their collection of Bonsai trees in a variety of different ways around, or near, their ponds — on rocks at the edge of the pond or on wooden slatted platforms, attached to the raised sides of their ponds. Where a Koi keeper has a natural-looking pond, raked gravel or white stone chippings can be another way of displaying their collection of Japanese Bonsai, along with the Buddha's Lanterns and Bamboo plants, all to give the illusion of a small part of Japan in their English garden.

My tallest tree, a Trident Maple, grown from a cutting is only 34in high and my other trees average between 8in, for trees still in training, to 24in. However, it is not my intention to grow all my trees to the same height. I have quite a few different varieties of trees in different styles which greatly add to their interest and beauty. You will find just by observing full size trees, and the way they grow naturally, that some species grow in a particular form.

Look for the style of tree referred to as 'windswept' — these can be found alongside motorways, on the edges of clifftops or on open moorland; you might like to emulate this style when training your own Bonsai trees. Wire the trunk to that it leans over and remove and shorten the branches on the outside of the bend, allowing the branches on the inside of the bend to be longer; this simulates the growth as it would occur naturally, with the wind coming from the opposite side.

But I ramble on. The emphasis of this article is to prepare Bonsai for the coming season after their winter 'rest'. This is a most important part of their culture if they are to pay their part in making your pond look its absolute best during the coming months, when, you will be spending most of your spare time gazing at it. So this is how I go about 'tuning up' for summer.

## DO IT NOW

March is the recommended time of the year to root-prune, re-pot or top dress your trees, removing most of the moss and debris that accumulated during the winter months. It is worth leaving a small amount of moss for replacing as decoration after you have top-dressed or re-potted. Most trees do not require complete re-potting every year but perhaps every other year with a top dressing in between. One can only generalise on this



PHOTO: SEAN BUCKEN

## The Bonsai Emporium

Specialists in Bonsai, Suiseki & Japanese Gardens

### "EVERYTHING FOR YOUR BONSAI NEEDS"

- Probably the most reasonably priced Bonsai Centre in the country.
- Hundreds of quality Indoor & Outdoor Bonsai from around the world displayed in authentic Japanese surroundings.
- Extensive range of Potential Bonsai Material — collected and nursery grown.
- Pots (mica, ceramic, handmade), Tools, Wire, Composts (uniclay, akadama) Fertilisers (chempak, biogold superthrive) and other unique products.
- Helpful and friendly after sales advice. Regular workshops from among the country's experts.
- Massive selection of books, videos and magazines (Bonsai, Bonsai Today, Bonsai International)

**NEW!!** Probably the only permanent display of Suiseki — Viewing stones for sale in the country.

**NEW!!** On sale now — an introductory guide to Suiseki by Joe Davies @ £2.95.

- All this within a beautiful five acre garden centre (why not try the coffee shop!) Bonsai Society Members are entitled to a 10% discount off Bonsai Emporium sales (on proof of membership).

盆栽

Roots & Shoots  
Garden Centre  
Nages Head Lane  
Upminster Common  
Essex RM14 1TS  
Tel: 01708 342469

(AQUARIST & PONDKEEPER)

Please fill in the details below (BLOCK CAPITALS)

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Post Code \_\_\_\_\_

**£5 VOUCHER**  
**The Bonsai Emporium**

Minimum spend £20.  
Valid 1st-31st March 1996  
in only the Bonsai and Japanese Gardening depts.

## WAKE UP TO SPRING Ponds and Trees DO Mix!

matter as growth rate between different varieties of trees, and the amount of time spent working on them in watering and feeding and, in fact, the type of feed applied.

However, if the tree had been growing well and putting on a lot of weight and root it will have pushed most of the compost out of the pot and, if this is the case, it will need re-potting. This entails taking the tree



PHOTOS: A&P LIBRARY

from the pot (without damaging the roots), combing the soil from them and, when it has all been removed, using a sharp pair of scissors or secateurs to shorten the roots by a third.

### WHAT IS A BONSAI?

I have often been asked "What is a Bonsai tree?" "What ones should I keep and how big should they be?" Bonsai trees can be grown as small or as large as you like but, like ponds and gardens, should, I believe, be grown in proportion to the surroundings they are to complement.

To answer the first part of the question, a Bonsai is a tree in a pot. The tree is small (and kept small) by constricting its roots in a small container or pot and its shape, or style controlled by regular root and branch pruning, and by wiring some or all branches to give it a more pleasing aspect. Because it is planted in a small container it is totally dependent on its owner for its supply of water, twice or three times on a hot or windy day, as well as overhead sprays with cold water on the hottest summer days. Also one must not forget they need regular feeding and all the necessary trace elements to keep the happy and healthy.

People have their own ideas what kind and style of Bonsai to include in their collection. A small collection might consist of a red Japanese Maple, a green Japanese Maple, a Scots Pine, a Japanese Larch and a common Juniper.

Never have more trees than you can comfortably look after. I have seen quite large collections of Bonsai trees that the owners have sadly neglected, because of the lack of time they have available to care for them properly.

Provided the pond trees and ornaments are kept in proportion it doesn't matter whether the plot is large or small — they can all give their creators equal amounts of pleasure.

As for the size of the tree, it should, in my opinion enhance its surroundings and not intrude and look out of place. Let's take, for example, a Coast Redwood (*Sequoia sempervirens*) an evergreen coniferous tree native to the Pacific coast and grown for timber; it is thought to be the tallest tree in the world, one having grown to 111 metres or 367ft in California. If one of these trees was planted in a pot and was 6-7ft high it would be a larger Bonsai and look out of place on any but the very largest of garden ponds but, because of its size in relation to a mature tree, it would still be a Bonsai for all that.

## HERONS BONSAI

BRITAIN'S PREMIER  
BONSAI NURSERY RUN  
BY DAWN & PETER CHAN

For the most comprehensive range of  
Bonsai requirements, at prices to suit  
everyone.

Classes held regularly.

Come and enjoy our nursery which is set  
in acres of beautiful classical Japanese gar-  
dens.

We also sell Japanese garden accessories,  
such as lanterns, bamboo fences,  
Japanese garden trees and shrubs.

Open 7 days a week. Easy access from junction 6 of M25.  
Also deliveries nationwide.

For full colour catalogue please send £1 & SAE:  
Wire Mill Lane, Newchapel, Nr. Lingfield, Surrey RH17 6HH.  
Tel: 01342 832657.

## WAKE UP TO SPRING

# Legacy of '95



As we look forward to the Summer of '96, it is worth looking back at last year that was, for most of us quite an exceptional year. It gave most of us the longest spell of hot, sunny weather experienced for many years. But, 1995 also held a surprise for us in December, which was the very cold snap we experienced between the Christmas and New Year holidays.

We received a record number of calls on the Cyprio Help line last year — over 11,000 — so I thought it would be a good idea to pass on the key experiences gained from those calls.

The long summer created three unusual conditions namely high temperatures, lack of rain, and plenty of sunlight. These in turn created their own problems which, though all connected, I will deal with individually.

### HIGH TEMPERATURES

High temperatures raise the metabolic

### JONATHAN HART EXPLAINS WHY YOUR POND MAY HAVE FOUND 1995 TOO HOT TO HANDLE.

● PHOTOGRAPH BY THE AUTHOR ●

rates of both fish and plants. This means that fish in the pond want to eat more, and hence they will produce more waste. The effects of this are two-fold: firstly, the micro-organisms responsible for degrading the waste need more oxygen to complete the job. Secondly, increased metabolism in fish raises the amount of oxygen they consume. Both these factors can substantially increase the total oxygen demand of the pond. Unfortunately the amount of oxygen that water can hold in solution decreases as the water temperature increases. These conflicting factors are therefore a recipe

for disaster if the increased demand for oxygen is not satisfied.

In several cases, during our analysis of the reasons for oxygen deficiency it became obvious that some ponds had, inadvertently, become over-stocked. But by far the largest percentage of problems reported were related to pumps.

For a pump to work a filtration system effectively, it must circulate the pond water every 1 1/2 to 2 1/2 hours and be powerful enough to provide adequate aeration in the process, via a spray bar or venturi. This ensures that the filtration system stays ahead of the production of waste in the pond, and sufficient oxygen is provided to satisfy the oxygen consumption both of the fish and the filter. I always recommend circulating the pond more often, say, 1 1/2 to 2 hours if you have a high stocking level, or if you keep Koi. The pump should be a solid-handling pump so that the frequency of blockage, and resultant reduced flow (which also reduces aeration), is avoided. You should locate the pump as

## WAKE UP TO SPRING

### Legacy of '95

far away as possible from the filter outlet, and at the deepest point in your pond.

This all ensures that the full content of the pond is circulated at the correct rate, and allows the de-oxygenated water at the bottom to be brought up to the surface so that carbon dioxide can be removed, and fresh oxygen absorbed.

In planted ponds, oxygen levels are at their lowest during the last few hours of darkness. The reason is that the process of photosynthesis (the plants' method of producing foods, which produces oxygen as a by-product) is light-dependent and, as such, is greatly reduced at night. However, the consumption of oxygen in a pond continues, and therefore literally begins to run out. Therefore, during warm, hot weather you must provide maximum aeration at night. This can be provided by a standby pump with a venturi fitted, or by an air pump with air lines going to various points around the pond.

However, despite having a pump that meets the above criteria, it is useful to be able to add more oxygen if conditions during the day get too hot. This can again be done with your standby pump or air pump. Another way of reducing oxygen tension in fish is to stop feeding.

**CONCLUSION** During high temperatures it is vital that your pump be powerful enough to achieve adequate turnover of the pond, and should run 24 hours a day. If fish start to gulp air at the surface then stop feeding immediately and provide additional aeration. I highly recommend keeping a standby pump identical to your main pump fitted with a venturi aerator.

### LACK OF RAIN

The lack of rain, and the subsequent restrictions imposed, caused problems for many people last year. At a time when there were problems washing and even finding drinking water, the problems in the pond were probably of least concern. However, as a result of the conditions water levels in many ponds began to fall. This led to a rise in concentration of dissolved organic matter (fish waste) remaining in the water. This added to the problem of oxygen depletion as it restricted the ability of water to absorb oxygen. Again, this is where the importance of an efficient filtration system comes into play, and over-stocking becomes a

serious problem.

Another effect of increased dissolved organic matter is the formation of surface foam. This is not only unsightly, but the condition of which this is a feature means that the efficiency of gas exchange across the surface of the pond is reduced.

One way to help solve the problem is to set up a method of collecting rain water which can then be stored ready for use in long periods without rain. Whilst this is not going to solve the problem totally, it may well help. One word of warning however, we have had reports of acid rain falling and causing problems in ponds, so do test the water particularly for pH before you use it.

**CONCLUSION** Again ensure that your pump meets the requirements already mentioned and look into a method of collecting water for use in emergencies. If foaming becomes a problem add a defoaming agent.

### INCREASED AMOUNT OF SUNLIGHT

This problem, although very similar to that of high temperature, affects the pond and its contents in a different way. As previously mentioned, photosynthesis is light dependent and is the way plants produce their food. Therefore, the increased sunlight intensity caused a greater production of all algal species, increasing the problem with green water and blanketweed.

One very unusual side effect reported to us was the fact that small pieces of blanketweed were choking the filter but with no growth in the pond itself! This, after much head scratching and consultation with our Biologist and Horticulturalist, was put down to blanketweed growing too fast and not forming properly, leading to physical break-up almost as soon as it was forming.

### SUMMARY OF CONCLUSION ON SUMMER CONDITIONS

1. Look long and hard at your pump to ensure it meets the necessary criteria.
2. Look in to the purchase of a standby pump with aerator.
3. Replace the lamp in your Ultra Violet Clarifier (U.V.C.).
4. Ensure the Quartz Sleeve in your U.V.C. is clean.

5. Try not to over-stock your pond.
6. Use a defoaming agent to prevent surface foam.

### LOWER TEMPERATURES

The last problem 1995 presented to pond owners was the cold spell between Christmas and New Year, one we are still experiencing as I write. Unfortunately, the speed and severity with which cold snaps hit can catch many pond owners by surprise and lead to ice damage to pumps, U.V.C.'s, pipework and filters.

In general, problems are not experienced with systems that are left running since they only freeze under prolonged periods of sub-zero temperatures. This is because moving water freezes at a lower temperature than stationary water, in addition to this, up to 60% of the input wattage of a pump can be given off as heat into the water. But even a system left running can freeze if conditions are hard enough, and it is therefore vital that you keep a particularly careful watch on your pond during cold weather.

It is particularly interesting that the majority of freezing problems reported were caused by the failure to properly drain systems which had been switched off. Hence the remaining water expanded as it froze, causing breakages (particularly with U.V.C.'s). It is vitally important, if circulation is curtailed for whatever reason, that the U.V.C. is drained completely and removed for storage inside.

**CONCLUSION** Maintain circulation of your pond throughout the winter months but stay vigilant.

I hope I have not painted an over-gloomy picture. The Summer of 95 for most of us was glorious. If you did not experience a problem in 1995, it is quite likely that you will not experience any serious problems for many years to come. If you did suffer from some of the above points then I hope I have been of assistance in explaining these, so that they do not become a problem again.

Should you experience problems in the future, do not hesitate to call me or one of my colleagues on the Cyprio Helpline (01778 344502). We will do our very best to help.



yes, it's Bonsai — the art of miniaturising trees and shrubs. Adding these to the pond surrounds not only adds extra attractions but re-affirms the style of the whole scene — yes, I keep Koi as well!

## WHY BONSAI?

The big advantage of Bonsai in this context is, apart from lending a further Japanese flavour to the scene, that it is so manageable — you are in charge of things right from the start. You can develop and train the trees to just the right shape and size that you want (in theory that is, the practice is often a little more difficult and time-consuming!). Because of this 'scaleability', Bonsai makes the ideal addition to any suitably-themed water-garden from the largest right down to the smallest patio feature.

Bonsai can be an all-round pond decoration, but do not like HOT or DRY conditions. If you have taken the time and trouble to raise your Bonsai tree from seed and spent, say, five or ten years nurturing it, it would be foolish to have it perish. On the other hand, you may not have taken the trouble or had the time to raise your Bonsai tree from seed, but taken the 'short cut' and gone to a Bonsai nursery and paid a tidy sum of money for them. In this case, if you did not look after them I would think you have more money than sense!

Koi keepers display their collection of Bonsai trees in a variety of different ways around, or near, their ponds — on rocks at the edge of the pond or on wooden slatted platforms, attached to the raised sides of their ponds. Where a Koi keeper has a natural-looking pond, raked gravel or white stone chippings can be another way of displaying their collection of Japanese Bonsai, along with the Buddha's Lanterns and Bamboo plants, all to give the illusion of a small part of Japan in their English garden.

My tallest tree, a Trident Maple, grown from a cutting is only 34in high and my other trees average between 8in, for trees still in training, to 24in. However, it is not my intention to grow all my trees to the same height. I have quite a few different varieties of trees in different styles which greatly add to their interest and beauty. You will find just by observing full size trees, and the way they grow naturally, that some species grow in a particular form.

Look for the style of tree referred to as 'windswept' — these can be found alongside motorways, on the edges of clifftops or on open moorland; you might like to emulate this style when training your own Bonsai trees. Wire the trunk to that it leans over and remove and shorten the branches on the outside of the bend, allowing the branches on the inside of the bend to be longer; this simulates the growth as it would occur naturally, with the wind coming from the opposite side.

But I ramble on. The emphasis of this article is to prepare Bonsai for the coming season after their winter 'rest'. This is a most important part of their culture if they are to pay their part in making your pond look its absolute best during the coming months, when, you will be spending most of your spare time gazing at it. So this is how I go about 'tuning up' for summer.

## DO IT NOW

March is the recommended time of the year to root-prune, re-pot or top dress your trees, removing most of the moss and debris that accumulated during the winter months. It is worth leaving a small amount of moss for replacing as decoration after you have top-dressed or re-potted. Most trees do not require complete re-potting every year but perhaps every other year with a top dressing in between. One can only generalise on this



PHOTO: STAN BUCKING

## The Bonsai Emporium

Specialists in Bonsai, Suiseki & Japanese Gardens

### "EVERYTHING FOR YOUR BONSAI NEEDS"

- Probably the most reasonably priced Bonsai Centre in the country.
- Hundreds of quality Indoor & Outdoor Bonsai from around the world displayed in authentic Japanese surroundings.
- Extensive range of Potential Bonsai Material — collected and nursery grown.
- Pots (mica, ceramic, handmade), Tools, Wire, Composts (uniclay, akadama) Fertilisers (chempak, biogold superthrive) and other unique products.
- Helpful and friendly after sales advice. Regular workshops from among the country's experts.
- Massive selection of books, videos and magazines (Bonsai, Bonsai Today, Bonsai International)

**NEW!!** Probably the only permanent display of Suiseki — Viewing stones for sale in the country.

**NEW!!** On sale now — an introductory guide to Suiseki by Joe Davies @ £2.95.

- All this within a beautiful five acre garden centre (why not try the coffee shop!) Bonsai Society Members are entitled to a 10% discount off Bonsai Emporium sales (on proof of membership).

盆栽

Roots & Shoots  
Garden Centre  
Nages Head Lane  
Upminster Common  
Essex RM14 1TS  
Tel: 01708 342469

(AQUARIST & PONDKEEPER)

Please fill in the details below (BLOCK CAPITALS)

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Post Code \_\_\_\_\_

**£5 VOUCHER**  
**The Bonsai Emporium**

Minimum spend £20.  
Valid 1st-31st March 1996  
In only the Bonsai and Japanese Gardening depts.

## WAKE UP TO SPRING Ponds and Trees DO Mix!

matter as growth rate between different varieties of trees, and the amount of time spent working on them in watering and feeding and, in fact, the type of feed applied.

However, if the tree had been growing well and putting on a lot of weight and root it will have pushed most of the compost out of the pot and, if this is the case, it will need re-potting. This entails taking the tree



PHOTOS: A&P LIBRARY

from the pot (without damaging the roots), combing the soil from them and, when it has all been removed, using a sharp pair of scissors or secateurs to shorten the roots by a third.

### WHAT IS A BONSAI?

I have often been asked "What is a Bonsai tree?" "What ones should I keep and how big should they be?" Bonsai trees can be grown as small or as large as you like but, like ponds and gardens, should, I believe, be grown in proportion to the surroundings they are to complement.

To answer the first part of the question, a Bonsai is a tree in a pot. The tree is small (and kept small) by constricting its roots in a small container or pot and its shape, or style controlled by regular root and branch pruning, and by wiring some or all branches to give it a more pleasing aspect. Because it is planted in a small container it is totally dependent on its owner for its supply of water, twice or three times on a hot or windy day, as well as overhead sprays with cold water on the hottest summer days. Also one must not forget they need regular feeding and all the necessary trace elements to keep the happy and healthy.

People have their own ideas what kind and style of Bonsai to include in their collection. A small collection might consist of a red Japanese Maple, a green Japanese Maple, a Scots Pine, a Japanese Larch and a common Juniper.

Never have more trees than you can comfortably look after. I have seen quite large collections of Bonsai trees that the owners have sadly neglected, because of the lack of time they have available to care for them properly.

Provided the pond trees and ornaments are kept in proportion it doesn't matter whether the plot is large or small — they can all give their creators equal amounts of pleasure.

As for the size of the tree, it should, in my opinion enhance its surroundings and not intrude and look out of place. Let's take, for example, a Coast Redwood (*Sequoia sempervirens*) an evergreen coniferous tree native to the Pacific coast and grown for timber; it is thought to be the tallest tree in the world, one having grown to 111 metres or 367ft in California. If one of these trees was planted in a pot and was 6-7ft high it would be a larger Bonsai and look out of place on any but the very largest of garden ponds but, because of its size in relation to a mature tree, it would still be a Bonsai for all that.

## HERONS BONSAI

BRITAIN'S PREMIER  
BONSAI NURSERY RUN  
BY DAWN & PETER CHAN

For the most comprehensive range of  
Bonsai requirements, at prices to suit  
everyone.

Classes held regularly.

Come and enjoy our nursery which is set  
in acres of beautiful classical Japanese gar-  
dens.

We also sell Japanese garden accessories,  
such as lanterns, bamboo fences,  
Japanese garden trees and shrubs.

Open 7 days a week. Easy access from junction 6 of M25.  
Also deliveries nationwide.

For full colour catalogue please send £1 & SAE:  
Wire Mill Lane, Newchapel, Nr. Lingfield, Surrey RH17 6HF.  
Tel: 01342 832657.

## WAKE UP TO SPRING

# Legacy of '95



**A**s we look forward to the Summer of '96, it is worth looking back at last year that was, for most of us quite an exceptional year. It gave most of us the longest spell of hot, sunny weather experienced for many years. But, 1995 also held a surprise for us in December, which was the very cold snap we experienced between the Christmas and New Year holidays.

We received a record number of calls on the Cyprio Help line last year — over 11,000 — so I thought it would be a good idea to pass on the key experiences gained from those calls.

The long summer created three unusual conditions namely high temperatures, lack of rain, and plenty of sunlight. These in turn created their own problems which, though all connected, I will deal with individually.

### HIGH TEMPERATURES

High temperatures raise the metabolic

### JONATHAN HART EXPLAINS WHY YOUR POND MAY HAVE FOUND 1995 TOO HOT TO HANDLE.

● PHOTOGRAPH BY THE AUTHOR ●

rates of both fish and plants. This means that fish in the pond want to eat more, and hence they will produce more waste. The effects of this are two-fold: firstly, the micro-organisms responsible for degrading the waste need more oxygen to complete the job. Secondly, increased metabolism in fish raises the amount of oxygen they consume. Both these factors can substantially increase the total oxygen demand of the pond. Unfortunately the amount of oxygen that water can hold in solution decreases as the water temperature increases. These conflicting factors are therefore a recipe

for disaster if the increased demand for oxygen is not satisfied.

In several cases, during our analysis of the reasons for oxygen deficiency it became obvious that some ponds had, inadvertently, become over-stocked. But by far the largest percentage of problems reported were related to pumps.

For a pump to work a filtration system effectively, it must circulate the pond water every 1 1/2 to 2 1/2 hours and be powerful enough to provide adequate aeration in the process, via a spray bar or venturi. This ensures that the filtration system stays ahead of the production of waste in the pond, and sufficient oxygen is provided to satisfy the oxygen consumption both of the fish and the filter. I always recommend circulating the pond more often, say, 1 1/2 to 2 hours if you have a high stocking level, or if you keep Koi. The pump should be a solid-handling pump so that the frequency of blockage, and resultant reduced flow (which also reduces aeration), is avoided. You should locate the pump as

## WAKE UP TO SPRING *Legacy of '95*

far away as possible from the filter outlet, and at the deepest point in your pond.

This all ensures that the full content of the pond is circulated at the correct rate, and allows the de-oxygenated water at the bottom to be brought up to the surface so that carbon dioxide can be removed, and fresh oxygen absorbed.

In planted ponds, oxygen levels are at their lowest during the last few hours of darkness. The reason is that the process of photosynthesis (the plants' method of producing foods, which produces oxygen as a by-product) is light-dependent and, as such, is greatly reduced at night. However, the consumption of oxygen in a pond continues, and therefore literally begins to run out. Therefore, during warm, hot weather you must provide maximum aeration at night. This can be provided by a standby pump with a venturi fitted, or by an air pump with air lines going to various points around the pond.

However, despite having a pump that meets the above criteria, it is useful to be able to add more oxygen if conditions during the day get too hot. This can again be done with your standby pump or air pump. Another way of reducing oxygen tension in fish is to stop feeding.

**CONCLUSION** During high temperatures it is vital that your pump be powerful enough to achieve adequate turnover of the pond, and should run 24 hours a day. If fish start to gulp air at the surface then stop feeding immediately and provide additional aeration. I highly recommend keeping a standby pump identical to your main pump fitted with a venturi aerator.

### LACK OF RAIN

The lack of rain, and the subsequent restrictions imposed, caused problems for many people last year. At a time when there were problems washing and even finding drinking water, the problems in the pond were probably of least concern. However, as a result of the conditions water levels in many ponds began to fall. This led to a rise in concentration of dissolved organic matter (fish waste) remaining in the water. This added to the problem of oxygen depletion as it restricted the ability of water to absorb oxygen. Again, this is where the importance of an efficient filtration system comes into play, and over-stocking becomes a

serious problem.

Another effect of increased dissolved organic matter is the formation of surface foam. This is not only unsightly, but the condition of which this is a feature means that the efficiency of gas exchange across the surface of the pond is reduced.

One way to help solve the problem is to set up a method of collecting rain water which can then be stored ready for use in long periods without rain. Whilst this is not going to solve the problem totally, it may well help. One word of warning however, we have had reports of acid rain falling and causing problems in ponds, so do test the water particularly for pH before you use it.

**CONCLUSION** Again ensure that your pump meets the requirements already mentioned and look into a method of collecting water for use in emergencies. If foaming becomes a problem add a defoaming agent.

### INCREASED AMOUNT OF SUNLIGHT

This problem, although very similar to that of high temperature, affects the pond and its contents in a different way. As previously mentioned, photosynthesis is light dependent and is the way plants produce their food. Therefore, the increased sunlight intensity caused a greater production of all algal species, increasing the problem with green water and blanketweed.

One very unusual side effect reported to us was the fact that small pieces of blanketweed were choking the filter but with no growth in the pond itself! This, after much head scratching and consultation with our Biologist and Horticulturalist, was put down to blanketweed growing too fast and not forming properly, leading to physical break-up almost as soon as it was forming.

### SUMMARY OF CONCLUSION ON SUMMER CONDITIONS

1. Look long and hard at your pump to ensure it meets the necessary criteria.
2. Look in to the purchase of a standby pump with aerator.
3. Replace the lamp in your Ultra Violet Clarifier (U.V.C.).
4. Ensure the Quartz Sleeve in your U.V.C. is clean.

5. Try not to over-stock your pond.
6. Use a defoaming agent to prevent surface foam.

### LOWER TEMPERATURES

The last problem 1995 presented to pond owners was the cold spell between Christmas and New Year, one we are still experiencing as I write. Unfortunately, the speed and severity with which cold snaps hit can catch many pond owners by surprise and lead to ice damage to pumps, U.V.C.'s, pipework and filters.

In general, problems are not experienced with systems that are left running since they only freeze under prolonged periods of sub-zero temperatures. This is because moving water freezes at a lower temperature than stationary water, in addition to this, up to 60% of the input wattage of a pump can be given off as heat into the water. But even a system left running can freeze if conditions are hard enough, and it is therefore vital that you keep a particularly careful watch on your pond during cold weather.

It is particularly interesting that the majority of freezing problems reported were caused by the failure to properly drain systems which had been switched off. Hence the remaining water expanded as it froze, causing breakages (particularly with U.V.C.'s). It is vitally important, if circulation is curtailed for whatever reason, that the U.V.C. is drained completely and removed for storage inside.

**CONCLUSION** Maintain circulation of your pond throughout the winter months but stay vigilant.

**I hope I have not painted an over-gloomy picture. The Summer of 95 for most of us was glorious. If you did not experience a problem in 1995, it is quite likely that you will not experience any serious problems for many years to come. If you did suffer from some of the above points then I hope I have been of assistance in explaining these, so that they do not become a problem again.**

**Should you experience problems in the future, do not hesitate to call me or one of my colleagues on the Cyprio Helpline (01778 344502). We will do our very best to help.**

## COLDWATER

## Q&A

**Q** Our two Goldfish were both a nice orange colour when we bought them but now, several years later they are a pale shade of brass. We keep tropicals as well, and treat the goldfish in such the same way, feeding them the same foods etc. The only difference between the two aquariums is that the tropical one has lighting but the goldfish tank doesn't. Could this be why the fish have lost their colour?

**A** Light, or rather the lack of it, is almost certainly the reason although the fact that you have kept these fish for several years must mean they are well looked after. Two things make goldfish gradually lose colour in the way you describe: vitamin deficiency and inadequate light.

A vitamin problem seems unlikely because all good fish foods contain sufficient, at least, when first purchased. Don't use old foods; if necessary, buy smaller packs as, once opened, all foods begin to deteriorate. (By the way, foods formulated for tropicals have a different make-up to those for goldfish; don't expect good results from sharing the same tin!)

The best lighting for fish is daylight; this is why goldfish kept in outdoor ponds are usually a better colour than those kept indoors. The solution for you is straightforward - fit your goldfish tank with suitable lighting. Not only will the fish benefit, aquarium plants will grow better and the whole assembly will be so much more attractive.

**Q** My 2ft coldwater aquarium contains one Grass Carp and one Weather Loach. I intend to get another Weather Loach and some catfish. Could you tell me what other fish I could put in and what food would be suitable for all of them?

**A** In a mixed collection, you must be careful as not all species will live peaceably together. North American Catfish are predators, for instance, and should be kept accordingly. Grass Carp will grow large and are better suited for the outdoor pond or very large tanks. The Weather Loach are peaceful, sociable and undemanding, but they do enjoy company of their own kind so you are wise in planning to get some more.

What other fish you may want to keep depends on your own tastes and the best advice I can give you is to do some fact-finding about them first: your local library will have books on coldwater fish, *The Interpet Guide to Coldwater Fishes* by Dick Mills is a very useful starter. By doing advance 'homework' you will not have too many failures or disappointments and your hobby will then last you a whole lifetime - and you still won't have learned everything.

**Q** Our pond is 16ft by 12ft with about 5 gallons per sq ft of surface area. A 3in pipe feeds water to a settlement tank with brushes and UV lamp with part of the outflow being redirected through a foam and gravel filter. The pond capacity is 1250 gallons and the pump rate is 1300 gallons per hour. Tests for acidity, nitrites and nitrates show no water quality problems. The five Lilies flower but growth is stunted. The fish are four 11in Koi, six 12in Golden Orfe, four 4in Goldfish and twelve small ones.

QUESTIONS FOR THE  
COLDWATER Q&A SHOULD BE ADDRESSED  
TO: ALEX STEPHENSON,  
c/o MJ PUBLICATIONS LIMITED,  
CAXTON HOUSE, WELLESLEY ROAD,  
ASHFORD, KENT TN24 8ET.

The problem is water clarity — clear through winter, then dirty-brown/green in Spring. Filter brushes rapidly became clogged with silt needing cleaning every three weeks. Lately the water became less cloudy but stronger green with less silt being deposited.

As the pond was not designed for Koi we are wondering if they are the cause. The pond gets early morning sun but except for midsummer is shaded from the full mid-day sun.

The pond has not been vacuum cleaned. Snails don't multiply nor frogs visit — just a lonely toad — but we are in a dry part of Dorset.



Golden Orfe.  
PHOTO:  
AAP LIBRARY

**A** From its description, your pond has much to recommend it but by my calculations it is much too shallow. Such pools, despite having a large overall capacity, are prone to wide fluctuations of temperature. In winter they can freeze really hard; again, the shallowness absorbs a great deal of light which encourages green algae.

The effect of large fish in shallow water stirring up the bottom will also cause more cloudiness than in a deeper pond. With your pump approximately turning over the pond every hour (we'll be generous and assume you keep your filters clean!) water currents may well be upsetting your Water-lilies which prefer still waters, although your Golden Orfe are clearly enjoying the river-like flow.

Solving the problems your pond is having may not be easy: providing shade could help in the short term to cut down the green water, however a serious look at the design might be required.

These two books may well be of help:  
*PONDS & WATER GARDENS* by Bill Heritage (Blandford ISBN 0-7137-1861-7).  
*BOOK OF WATER GARDENS* by John Dawes (TFH Books ISBN 0-86622-662-1).



### Control Algae with Pond Pads

- Natural, convenient barley straw treatment
- Backed by years of research at CAPM
- Continuous protection against all algae
- Fully biodegradable • Harmless to wildlife

One pack of 3 Pond Pads protects ponds of up to 700 gallons for approx. 12 months. From good Aquatics and Water Garden Centres, or send £5.88 cheque/P.O. to:

**Green Ways Environmental Care** (Dept APK)  
South End Farm, Long Reach, Ockham, Woking, Surrey GU23 6PF  
Tel: (01483) 281391. Fax: (01483) 281392

# Jackie's Juniors



Hi, my name is Jackie Bradbury and I love having fun with youngsters, especially young fishkeepers. I should like to share with you some of my favourite jokes, puzzles and funny stories in the hope of making you smile. Have you got any jokes or funny experiences to share with us? Please make me laugh and send material to Jackie's Juniors, c/o Aquarist and Pondkeeper, Caxton House, Wellesley Road, Ashford, Kent TN24 8ET. Send a drawing of your favourite fish, or illustrate your story with a cartoon. Please remember to include your name, age and which

Society you belong to, if any. Those wonderful people at JOHN ALLAN AQUARIUMS have given us some fantastic prizes for the best contribution each month — so get cracking!

## DIY Decor

David Mawdesley, of **Wycombe & District A.S.**, wins this month's prize for the Best Article and will be receiving his prize direct from our sponsors, John Allan Aquariums (01284 755051) shortly.

Making your own aquarium decor has several advantages over the shop bought decor:

It is cheaper; it is more versatile; You can make it fit your aquarium exactly.

I am going to explain how I went about making some decor for my 2' 6" goldfish tank. I used some stones, called paddlestones. These are normally oval, grey and quite thin. They vary from about 1in long to about 6in. I think they are normally used to surround ponds. As they are normally bought in large quantities, they were only 10p a lb. I bought a variety of sizes.

As the stones were obviously not sold especially for fish tanks it was important that they were cleaned before I put them in the tank. So when I got home I put them in a saucepan, covered them with water and left them to boil for about 10 minutes. Then I drained the water, and left them to cool down. Then I scrubbed them clean, and boiled them again. Then I left them to dry.

When the stones were dry I got out the aquarium sealer, and started to make my tank decoration. I had an idea of the size and shape I wanted it to be, so I set to work. (Make sure you do this kind of job with a window open, or do it out of doors — the sealant has a strong vinegar smell to it and it could make you feel a bit dizzy.) I had to build it in small sections, let each of them dry and then stick the sections together.

When it was finished I left it for 48 hours to ensure the sealer had finished setting, then I lowered it into the tank. This is a sketch of the finished result:



As you can see there are plenty of interesting alternatives for the fish to swim through but there are no places where a fish can get caught up. You could use this idea to make caves for fish that like them or for fish that only come out at night.



David Mawdesley wins, courtesy of our friends at JOHN ALLAN AQUARIUMS, a EHEIM 2006 INTERNAL FILTER (pictured here), which will be despatched to him as soon as possible.

Customer in a restaurant:

"Walter, what is this fish doing in my soup?"

Walter: "Er, I think it's the backstroke, sir."

There were two Goldfish in a tank — one says to the other:

"Have you got any idea how to drive this thing?"

Q. What is a frog's favourite

Sower?

A. The croakies.

Q. What is a frog's favourite drink?

A. Croak a cola.

Q. What kind of fish do you find in a bird cage?

A. A Finch.

Q. What do you call a Goldfish scientist?

A. Professor boggie-eyes.

Q. What do you call a frog spy?

A. A croak and digger agent.

Q. What lives in the Thames and terrifies London?

A. Jack the Ripper.

## WORD SEARCH



## FIND

ANGELFISH

DANIO

DISCUS

GOLDFISH

GUPPY

MOLLY

PLATY

RAM

SCISSORTAIL

SHARK

SWORDTAIL



# frogs & friends

By BOB and VAL DAVIES



## HERP FACT FILE



### Alpine Newts (*Triturus alpestris*)

Male Alpine Newt just coming into breeding condition.

PHOTO: BOB & VAL DAVIES

Attractive, easy to breed, very hardy newts which will often remain totally aquatic which makes feeding easier.

#### HOUSING

A small, 45x30x30cm (18x12x12in), planted aquarium with 16 to 18cm (6 or 7in) of water will house up to three pairs. A mesh lid or cover glass (slightly raised for ventilation) is necessary to prevent escapes. A light position is needed to encourage plant growth but direct sunlight will cause overheating. Plants with long, narrow leaves will be used by females for egg-laying — eggs are stuck on the underside of the leaves which are then curled over for protection. Suitable plants are *Elodea densa*, Starwort (*Callitriche*) or *Hygrophilla polysperma* etc. These plants will probably die off over winter especially the latter which is ideally for tropical aquaria.

#### FOOD

For adults — earthworms, bloodworms, *Daphnia* and crickets (even in the water). Reptomin® pellets and bits of raw, lean meat will also be taken.

#### BREEDING

Adults are easy to sex — males are more colourful and smaller than females. Breeding males also exhibit a low spotted dorsal crest. Egg-laden plants should be removed to a suitable container as adults are cannibalistic. If *Daphnia* are introduced to this container they will breed and provide a food supply for the tadpoles after the infusoria stage. Infusoria will sustain the *Daphnia* as well as the young tadpoles. Infusoria (green water) is the first food for tadpoles and is produced by adding bruised lettuce to jars of water which are allowed to stand outside. Using water from a garden pond will usually speed up infusoria development.

Once the tadpoles have hatched a small amount of infusoria culture is added to the water daily. Food size is increased as the tadpoles grow. If desired small 'rafts' can be supplied for the metamorphosed tadpoles which can be allowed to live in a terrestrial vivarium (feeding is more difficult on land).

#### HIBERNATION

Although very hardy the newts must be prevented from freezing in winter. One group survived when their aquarium was almost frozen solid apart from a small 'chamber' in the centre.

## CITES NEWS

**TORTOISES** — Under E.C. Regulation 3626/82 all (endangered) species listed in Appendix I (CITES) or Annex C1 of the Regulation cannot be sold unless the vendor has obtained an Exemption Certificate from the Department of the Environment. Two specific exemptions (SPEX 1

and SPEX 2) came into Force last year — they allow the sale of the Spur-thighed tortoise (*Testudo graeca*), Hermann's Tortoise (*T. hermanni*) and the Marginated Tortoise (*T. marginata*) provided they have:

- (i) been bred in captivity or
- (ii) been lawfully imported into the European Union in accordance with CITES

regulations either before the E.C. regulation came into force or before the species became subject to sales controls in that Regulation. If buying or selling any of these species these criteria and all other conditions relating to the specific exemptions must be satisfied otherwise an individual exemption is still needed. If in doubt contact the Dept. of

Environment. Other A1/C1 species still require individual exemptions.

**FURTHER CONTROLS** — The following species from Egypt have been placed under an E.U. Article 10.1.(b) ban:

- Black Spiny-tailed Lizard (*Uromastyx acanthinurus*)
- Egyptian Spiny-tailed Lizard (*U. aegypticus*)
- Ornate Spiny-tailed lizard (*U. ocellatus*)
- Egyptian Sand Boa (*Eryx jaculus*)

This ban states they cannot be imported into the E.U. "only if the applicant (i.e. importer) provides evidence that the intended recipient possesses adequate facilities suitable for accommodating the species and suited to its behaviour and that the animal will be properly cared for".

## Homing instincts

It is well-known that many amphibians faithfully return to the pond where they were born in order to breed. This instinct is so strong in certain species that even when removed long distances from the site they can still find their way back. Red-belly Newts (*Taricha rivularis*) of Western USA were transported 15 km from their breeding pond but managed to return even though they had to cross mountains and streams in which some of their own species bred.

DNA samples from young Loggerhead Turtles off Baja, California seem to have proved that they actually travel from nesting sites in Japan and Australia, some 10,000 km. No known nesting sites exist on the Eastern Pacific coasts, although it is possible there may yet be unknown sites where turtles with the same DNA nest. If not, then the turtles, once mature, must again make this incredible journey of more than one-third of the world to return to their nesting sites.

## Frequent imports

The most commonly imported Monitor Lizard is the Bosc's Monitor (*Varanus exanthematicus*). Other Monitor species grow too large for the average keeper but Bosc's has a maximum size of about 120cm (4ft) although this is rarely achieved in captivity. If obtained as babies they can become quite tame, but larger



Bosc monitors are very appealing as babies but grow to be large, powerful lizards.

PHOTO: BOB & VAL DAVES

specimens have powerful jaws and may well use them. Bosc's should be kept at 35°C (95°F) near the hot spot with a thermal gradient down to 25°C (78°F) in the day, dropping to 16°-20°C (60°-68°F) overnight.

Babies will utilise climbing facilities and will take insects (with vitamin supplements). Juveniles are more terrestrial

and their diet includes eggs, rodents, nestling birds and carrion. Unlike other Monitors water for swimming is not needed but dish of drinking water should be supplied. Bosc's can be aggressive towards each other, especially at feeding time, and are best kept singly. Most available specimens are wild-caught or

## IN BRIEF

A cheap, powerful wine is becoming popular in Cambodia. It is made from mashed toads mixed with honey and sugar and then fermented. It is believed to be a cure for Syphilis and was previously sold as a herbal medicine.

The use of reptiles in Eastern medicine had led to a decline in a number of species. In Vietnam the Tokay Gecko (*Tokay tokay*), which is thought to cure asthma and other respiratory diseases, is now becoming difficult to find. It is hoped to start a Tokay farming project which will provide income for the villagers and lead to its protection in the wild as new breeding stock will be needed occasionally.

Anocrod, a powerful blood-thinner derived from the venom of the Malayan Pit Viper is being tested in the USA on stroke victims and would seem to be having favourable results. The substance, it is hoped, will help break down clots in the arteries which stop the flow of blood to the brain. Two problems exist — it must be administered as soon as possible and as yet it cannot be synthesised — supplies have to be milked from live snakes.

After a number of hunters had lost their dogs near a swamp in Florida the culprit was finally found to be a 3.5 metre long alligator. It had eaten a dog which wore an electronic tracking collar. The alligator was destroyed.

Editor's Note: O.K. who doesn't know their Chameleon from their Skink? Our design department unfortunately got the pictures mixed up in our last issue — perhaps they thought Chameleons could change body shapes as well as colours! Sorry folks.

## AQUASPLASH

### SNAKES, SPIDERS, LIZARDS & ACCESSORIES

MUS GARDEN CENTRE  
BATH ROAD, HARE HATCH  
READING, BERKS  
Tel: (01734) 404188  
OPEN 7 DAYS



## CLUBS

LIVE IN ESSEX and interested in reptiles/amphibians? E.R.A.S. meet in Witham on the second Thursday of each month. Contact 01621 819675 for further information.



## THE REPTILE MASTERS LTD.

Little Warley Hall Lane  
West Hamdon, Near Brentwood  
Essex CM11 2EN, England  
Tel: 01277 811779

OPEN 7 DAYS A WEEK 10AM TO 5PM  
Come and visit the largest reptile house in the south. All of our stock is beautifully displayed to the public. We supply snakes, toads, spiders, guanas, lizards, live and frozen foods, plus all the accessories you require — too much to list.  
Trade Welcome — Friendly Service and Free Advice — Mail Order Access/VISA — Mastercard welcome

'captive-farmed' in West Africa and should be checked for ticks, mites and worms (the latter in faeces).

## Snake venom

According to the World Health Organisation statistics up to 40,000 people die annually from snakebite — mainly in the rural areas of South-east Asia, West Africa and Central/South America. The main culprits are the Asian Cobra (*Naja naja*), Russell's Viper (*Vipera russelli*), Saw-scaled vipers (*Echis sp*) and the Fer-de-lance (*Bothrops atrox*).

Milking venomous snakes

produces from a few microlitres to 6 or 7 millilitres according to species, the larger amounts being extracted from pit-vipers such as the Fer-de-lance and Diamondback Rattlesnakes (*Crotalus*). Research suggests that only half the available venom is delivered in one bite so that the snake is not defenceless and could conceivably deliver another lethal bite.

The most venomous species are said to be the Eastern Brown snake (*Pseudonaja textilis*) and the Desert Taipan (*Oxyuranus microlepidotus*) both from Australia — less than one millionth of a gram of their venom is sufficient to kill a mouse.

## Sloughing



Royal python with remnants of slough still attached.

PHOTO: BOB & VAL DAVES

Unlike fish in which each scale is a separate entity the skin of reptiles consists of a keratinous layer which forms a complete outer covering. This layer is thickened in parts to form scales which are often 'folded' back to overlap each other — individual scales are loosely 'hinged' at the base to allow greater flexibility of the body.

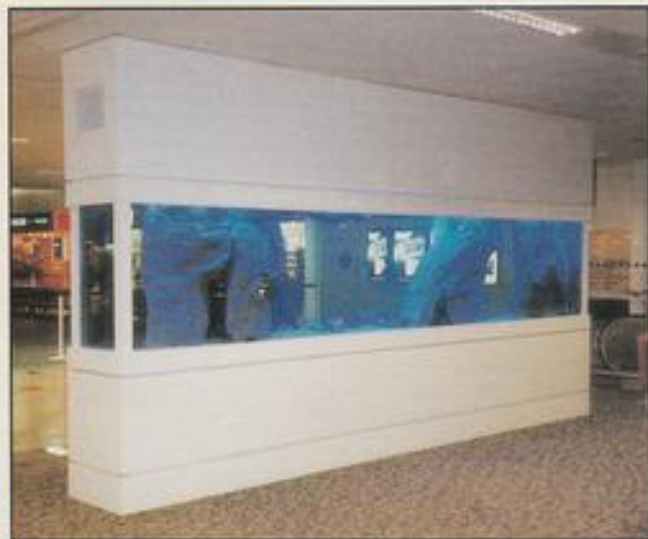
*Teratascincus* is an exception, its scales resemble those of fish and will often come off if roughly handled.

The skin is sloughed (shed) periodically and is eaten by many Geckos. Sloughing is usually

piecemeal in lizards and complete in snakes. Just prior to sloughing the animal takes on a grey/blue milky appearance. This is particularly noticeable in snake's eyes. As the old skin separates from the new the milkiness seems to clear and usually the old skin is then shed. Snakes will rub the lips against a rough surface and then continue pushing until the skin is peeled off inside out.



# News Desk ... News Desk ..



## Flight-delayed passengers can watch the fish

Possibly the longest single panel aquarium display in the world is being built in a major project at Heathrow Airport, to display Rift Valley Cichlids.

The panel, weighing approximately 362kg (800lbs) will be 5500mm (18ft) long and 1150mm (45in) in height, with a thickness of 25mm (1in). Jerzy Gawor, Projects Co-ordinator, explained that 750 gallons of water will be circulated with a turnover rate of approximately three times per hour, and will incorporate an automatic advanced water management and closed circuit filtration system. "This will incorporate electronically programmed fibre-optic and actinic blue lighting," added Jerzy.

"The aquarium will provide a tropical freshwater habitat for fish from the Rift Valley of Africa and is designed to reflect the natural grace and beauty, as well as the diversity of wildlife for which the African continent has no equal," said Jerzy.

## "Brits care about their fish" — Interpet

Fishkeepers are taking better care of their fish, according to aquatics products manufacturer Interpet, which reports that the company has produced over one million aquarium treatments over the year to last November.

The most popular treatments in the Interpet range are said to be Anti-White Spot and Anti-Fungus and Finrot, reflecting that these may be the most common problems encountered by the estimated three million fishkeepers in the UK.

"The range is really a complete care package which provides everything that aquarium fishkeepers should need," explained Interpet brand manager Adrian Exell. "The phenomenal success of the range clearly indicates that

customers are treating the main cause of aquarium fish problems, helping to make the UK aquarium fish population fitter, longer-living, and happier as a result."

Interpet's aquarium treatment range comprises 12 treatments, which are not dye-based, are colourless, provided in a single dose, and harmless to plants, filters, and fish. As well as treating for the more common fish ailments, the range also provides treatment

against the higher parasites and are available without a vet's prescription. The higher parasites include crustaceans, fish lice, gill maggots, anchor worms, and fish leeches. A further unusual treatment, said by Interpet to be 'unique', eliminates the bacteria which causes ulcers and dropsy in fish.

**Interpet, Vincent Lane, Dorking, Surrey RH4 3YX. Tel: 01306 881033. Fax: 01306 885009.**

## From pigs to fish ...

Meat processor Cranswick plc has acquired Hertfordshire-based Tropical Marine Centre — one of the largest suppliers of tropical marine fish in the UK.

The acquisition, said to be for 4m, fits the Cranswick's strategy of developing the pet food sector "alongside the company's existing

## Tetra support to Tropical House

Funds for a new Tropical House at Marwell Zoo, Hampshire, has received a boost from Tetra with the company's donation of £1,200 to the project. The money was raised by Tetra from sales at Hampton Court Flower Show last year.

A spokesman for Tetra explained: "The company looked to donate money to a project which related to the industry, and it was felt that the Tropical House was particularly relevant; it is local to our Southampton base and we produce what we believe is the world's largest-selling tropical fish food."

"Once completed the Tropical House at Marwell Zoo will be the nearest to the Tetra headquarters and it is hoped that future contact and sponsorship will take place. Tetra has previously sponsored a pond at the zoo by providing food for the pond fish, and this latest project is a further example of the continuous liaison between the two organisations."



Tetra's Advertising and Promotions Manager, David Pool, presents John Knowles, Zoo Director, with £1,200 in a TetraMin tub which will go towards their Tropical House.

# News Desk ... News Desk

agribusiness and meat products activities", according to chairman Jim Bloom.

As well as supplying coldwater and tropical freshwater fish, Tropical Marine Centre manufactures a range of frozen foods under the Gamma brand, and provides a range of ultra-violet water clarifiers and filtration units for aquariums and ponds. The company has recently built a marine hatchery — believed to be the first of its kind in Europe.

To March 1995 TMC generated an adjusted pre-tax profit of £651,000 on sales of just under £4m, according to Cranswick, who recently announced an profit themselves of £1.46m. The company added that the present management team will be retained, adding 40 staff to take the total number of employees in the group to around 450.

**Cranswick plc, The Airfield, Cranswick, Driffield, North Humberside YO25 9PF. Tel: 01377 270549.**

## Anglo Aquarium catalogue



A 56-page full-colour catalogue, containing illustrated details of the company's range of pond and aquarium plants, has been

published by Anglo Aquarium Plant Company. The catalogue also includes marginals and moisture-loving plants as well as information on the company-designed special pots, sales display material for retailers, filtration equipment, and molluscs.

The brochure contains over 250 colour illustrations, and free copies are available to bona fide trade buyers from **Anglo Aquarium Plant Company, Strayfield Road,**

**Enfield, Middlesex. Tel: 0181-363 8548. Fax: 0181 363 8547.**

and books, to equipment and foods.

**Indoor Ocean, 125 Station Road, Ellon, Aberdeenshire AB41 9FA. Tel: 01358 724242.**

## Tetra display for retailers

Retailers who order Tetra's pre-pack 'Medica' display unit will receive six additional bottles of the company's recently-launched 'Revite' treatment free-of-charge.

The display unit contains 30 boxes in total, comprising six single boxes of each of the five treatments in the Tetra range. A new packaging design is incorporated and the colour-coding helps customers to select the right choice for their requirements.

For information and enquiries about the Medica range and display contact: **David Pool at Tetra, Lambert Court, Chestnut Avenue, Eastleigh, Hants SO53 3ZQ.**



## TROPICAL WATERS

UNIT 16, 2 ST LAWRENCE BUSINESS CENTRE, VICTORIA ROAD, FELTHAM, MIDDLESEX TW13 7LT

TEL: 0181-751 0337/01372-843097

FAX: 01372-842658

**THROUGHOUT THE UK & EIRE AT VERY COMPETITIVE PRICES**

### CONSOLIDATION:

*Reliable and friendly service at very attractive freight rates for Tropicals, Marines and Aquatic Plants from our Suppliers or your own ... All queries on Consolidation welcomed.*

*Weekly/Fortnightly shipments: SINGAPORE, MALAYSIA, SRI LANKA, BANGKOK, INDONESIA, ISRAEL AND HONG KONG. Shipments also from: BOGOTA, CHINA, PERU, MLAMI, NIGERIA, ZAIRE and JAPAN (in season).*

### WHOLESALE:

*Lists mailed monthly of a wide range of fishes and plants in stock. Call us for a list!*

**\*\*\* STRICTLY TRADE ONLY \*\*\***

## On the ocean wave ...

You would imagine that fish would be the last thing that the skipper of a fishing trawler would be interested in once he gets ashore after a lengthy spell at sea. Well, that's where you'd be wrong, according to Fred Wallace, of Indoor Ocean, who says they are they are likely to spend time gazing at even more fish — in their home aquariums.

Fred runs the newly-opened aquarium shop, Indoor Ocean in Ellon, Aberdeenshire, and is himself an aquarist of some years standing. Like the fishing fleet's skippers, he is drawn to saltwater species and now has two Lahaina systems, one in his home and one in his office, both working splendidly.

Currently, Indoor Ocean is concentrating on tropical and coldwater aquarium fish, while a marine stock-holding tank is maturing, and the business also provides a comprehensive range for aquarists: from plants

## New sales team to "spearhead an all-out attack"

The aquatic marketplace has been threatened with "an all-out attack" by King British managing director Michael Sinclair, who has appointed a new sales team.

Three changes made to the sales team are the appointments of Stuart Hendry as Sales Manager, and Andrew Fox as Sales Representative; while Lester Bunce has the additional responsibility of Product Manager in addition to being Sales Representative.

"These are high calibre people with an impressive level of skills," said Michael Sinclair. "Our continuing product and packaging programme is already yielding dividends and, with a winning sales team in place, we look to the future with a great deal of enthusiasm and anticipation."

## MARINE Q&A

**Q** I have always loved the Moorish Idol, even before I started keeping marines. My dealer now has one in his shop. It is fat and healthy and the price is right. I already have an Emperor Angel and a Powder Blue Surgeon, so I am used to keeping difficult species. Would it be a good idea to buy the Moorish Idol?



Moorish Idols — a wonderful species but buy at your peril!  
PHOTO: ASP LIBRARY

**A** How many times do I have to tell people not to buy Moorish Idols? I admit that this species is THE most gorgeous of all, but on no account should you be tempted. Even experts cannot keep them and I must have told readers before about the one that keeled over before my very eyes, despite it feeding like a pig for two weeks, in an aquarium which was simply brilliant from the point of view of meeting its needs. The Emperor Angel is not for beginners, either, but is a piece of cake when compared with a Moorish Idol. The most wonderful species on the reef should be left there. They simply die in captivity.

**Q** My aquarium, which houses both fishes and invertebrates, has been running well for over a year, but recently I have noticed that *Xenia* coral is losing polyps. What can this be? All readings are fine.

**A** You say that all readings are fine but your corals are saying something else altogether. Corals are very sensitive to deteriorating water quality and so something is wrong somewhere. In the short term, start performing 50% water changes every week until the *Xenia* recovers. In the long term, take a long hard look at your aquarium. Go back through it with a fine tooth comb. Sooner or later, you will find the reason.


QUESTIONS FOR THE MARINE Q&A SHOULD BE ADDRESSED TO: GORDON KAY,  
c/o MJ PUBLICATIONS LIMITED, CAXTON HOUSE, WELLESLEY ROAD, ASHFORD, KENT TN24 8ET.

### INDOOR OCEAN

125 STATION ROAD, ELLAN,  
ABERDEENSHIRE

For all Coldwater, Freshwater,  
Tropical & Marine Fish, and  
associated hardware

Agents for LAHAINA Aquarium Systems

 **Tel: 01358 724242**

### MG MARINES

Churchfield Street, Dudley,  
West Midlands DY2 8QR

Tel: 01384 234579. Fax: 01384 211413

Large Selection of Marine  
Inverts and Dry Goods

Marine Systems  
made to order



THE CORAL CAVE




150 tanks, stocking  
coldwater, tropical,  
marine fish and invertebrates

PLUS A SUPERB CHOICE OF  
EQUIPMENT AND ACCESSORIES

Open 7 days a week • Friendly staff  
WITH FREE PARKING FOR 100 CARS

The Coral Cave, Aquatic Centre  
at Pet-Paks Superstore, 175 St. Neots Road,  
Hardwick, Cambridgeshire CB3 7QJ

Tel: 01954 212004



# You Write .....



## BIOPLAST LETTER OF THE MONTH

Dear Sir,

You have been asking why Aquatic Shows are not being supported as well as they used to be. May I relate my experiences?

As a junior member of Blackpool & Fylde Aquatic Society in the late 1940s-early 1950s, I attended displays and shows at church halls and the Winter Gardens, Olympia, Blackpool, Belle Vue Zoological Gardens, Manchester and other venues. What I remember most were the furnished aquaria — rows of beautifully-furnished aquariums that were a real treat to see — an advert that did more to bring newcomers into the hobby than anything thought of today.

I now compare that scene to the visit last year to the British Aquarists Festival at Bowlers' Exhibition & Conference Centre, Manchester, on Saturday 28th October 1995. My impressions were:

- (1) Venue very well signposted from exit of the motorway.
- (2) Good car parking.
- (3) Refreshments tasty, generous portions and reasonably priced.
- (4) Plenty of room to stop and view the exhibits and trade stands without causing an obstruction.
- (5) Plenty of chairs about where one could sit down (I am disabled).
- (6) Although, personally, I do not like the Tableaux-style of display they contained some excellent furnished aquaria

— the design, workmanship and attention to detail of the Darwin A.S. Tableau was a credit to the Society. My only problem with it was that the tanks needed to be about 12" higher for better viewing (maybe chairs provided?). The Halifax A.S. Tableau also contained excellent furnished aquaria — no, I'm not a member of either!

(7) Excellent lecture by Justin Bell on Cichlid Conservation in Lake Victoria.

Those were the good parts, now for the bad ones:

- (1) The stench in the gents' toilet was the only fault with the venue (it was already there at noon on Saturday and nobody attempted to rectify matters).
- (2) The politically-correct(?) result of the Tableaux Competition smelt almost as bad.
- (3) The location of the lecture hall was poorly indicated. For almost 40 years although I still kept fish, I did not attend shows (never had the time!). The last two years I have visited BAF hoping to buy a certain species of fish but alas no luck. Would it be possible to provide small stands where breeders of specialist species (or reptiles) could sell just HOME-BRED LIVESTOCK? These stands could be nominally-priced and also be offered to societies to sell the best of their members' home-bred surplus livestock.

I believe that, if the public knew before they went to the large national shows, there would be numerous home-bred specialist fish for sale, they would go expecting to spend money and be more ready to spend some of it at the trade stands too.

These have been the views of my wife and I. Yes, we did enjoy it and hope to go again this year.

Norman Young, Blackburn.

Mr Young's letter wins him this month's parcel of BioPlast products (worth £30.00) which will soon be reaching him from our sponsors BioPlast (tel: 01535 630230).

Dear Sir,

Quality Discus, what a debatable subject! I was very pleased to see such an objective, down to earth article by Brian Middleton in January's edition of *A&P*. I am sure the breeders of these crossbred fish, do not realise the injustice they do to themselves, the public and the hobby, selling these fish with no other motive, than the profit to be made. They make no consideration to the many years of hard work made by the true discus breeders that have spent a lifetime developing and improving TRUE STRAINS. It must be quite frustrating for them, seeing all these true strains being used for nothing more than foster parents.

I believe Discus should not be bred without consideration to body shape, colour, size and the overall health and well being of the fish and that these breeders no longer take these aspects into consideration.

Over the last four years I have myself fallen foul of this type of breeder who will sell you anything. They really think they are doing you a favour selling you fish at £5 to £6 each when really they are doing no more than ripping you off with stunted, diseased, poor quality fish. I know from my own experience that they are prepared to offer anything that you may be enquiring about, for example Cobalts sold as Steel-Blues, Red Turqs sold as Red Coaris, the list goes on. Any blue fish is a Steel-Blue one day, and another strain with the next enquiry. The same with the red strains, first one title and then another.

PIGEONS, DRAGONS, PERSIAN BLUES, BLUE JADES, GYPSY, TOMATO REDS, the names go on, only held back by the imagination of the breeder. Over the last few months I have also read about DWARF, RUGBY BALL and VEIL TAIL varieties. Where will it all end?

I would like to take this opportunity to say I have also gained some very good friends in the hobby that really do care above all else, about their fish. I hope I have not offended anyone, but hope I have given these dealers something to think about.

K. P. Lowe.

Dear Sir,

May I congratulate Peter Moon on his excellent article on Reverse Osmosis (*A&P*, February 1996) but, having been manufacturing widely-used aquatic RO Units in the UK since 1991 (not importing assembled units from elsewhere, I would take issue with one or two points.

'Installation under the sink is an obvious choice' yes, of course, but remember to keep the system away from anything which could heat it — such as the side which might have a washing machine/dishwasher against it.

'When not in use, membranes can be left in the unit (but still filled with water) for up to 30 days'. Having to sort out numerous users over the years who have found that their systems became contaminated with bacteria in just those circumstances, I would suggest that 'safer' advice would be to keep the majority of systems available on the market running (even very slowly) provided 'pure' water is still being produced. This has clear disadvantages (from the point of view of waste and expense), but unless an 'intermittent kit' (such as the one introduced by ourselves and fitted as standard to the P1500 de Luxe) is used, I can see no viable alternative.

Charles Harris, Director,  
Purity On Tap.

Dear Sir,

As Steriet keepers ourselves, we were interested in the letter from Richard Friend (Writeback,

A&P November 1995) but would dispute his conclusion that they are only suitable for the specialist. Our feeling is that they are not ideal for ponds (unless you can ensure that it is totally clear of blanketweed and any other obstructions), but, as aquarium fish, they can be kept successfully.

Our Sterlets, now some 18" long (having put on 1.6" in as many months) are currently housed in a 72x24x24in tank. Good filtration is essential for these messy fish and our external Fluval 402 and two 802 powerheads also ensure adequate water movement which they seem to appreciate. We do about 20% water changes per fortnight, pH, hardness etc do not seem to be critical — as the tank is in the garage (soon to be the fish-house) it is refilled straight from the garden hose! This does not cause any stress to the fish, indeed the fast flow of cold water is positively relished. Whilst a water temperature of around 50°F is ideal, our tank does not have a chiller although the temperature has yet to exceed 68°F, thanks to careful positioning and size of the

tank. Temperature is brought down by gradual water changes and no ill effects have been seen thus far.

Live food is not essential — our fish are hopeless at locating moving prey unless it actually touches their barbels and we now turn the powerheads off at feeding time to give the fish a chance to find the food before it goes into the filters. Ours are now fed only 'dead' food — previously frozen Tubifex, Mysis, Bloodworm are accepted along with prawns and chopped fish; sinking pellets, designed for carnivores, are also taken but not particularly appreciated! Our fish seem to prefer small pieces of food, ignoring anything too big. Vegetable matter is also enjoyed — any attempt to plant the tank is doomed, with Giant Vallisneria, Hygrophila, Amazon Swords and Elodea all reduced to stumps in 24 hours!

We would say that Sterlets can be kept successfully with a little time, effort and common sense — just make sure you do your homework before acquiring these graceful creatures.

David J. Herridge,  
Farnborough, Hants.

Dear Sir,

I purchased a 6" Diamond Sterlet and a 6" Sturgeon in October 1994 and put them into a 4x2x2ft fibreglass tank together with a 3" Tench and three 3" Koi. All went well for three months until one night I left my airstones off. The following morning both Sterlet and Sturgeon were dead but the other fish were OK. I replaced the losses with an 8" Diamond Sterlet and a 3" Sturgeon, removed the other fishes and added two airstones.

At the present time the fish are still thriving despite the water temperature exceeding 70°F in the summer. They have grown well on a diet of frozen bloodworm, chopped cockle and mussel and sinking wheatgerm pellets, the favourite being chopped mussel. The Sturgeon has now overtaken the Sterlet in size and is now 14" compared to the Sterlet's 11".

I have one 300 watt aquarium heater in the tank (set to come on during the cheap night rate) which maintains water temperature of 55-60°F. The tank is filtered by an Eheim 2215 external canister filter containing

Siporax, water quality is monitored constantly with any excess food etc being siphoned off daily with about two gallons of water.

I hope by the spring both fish will be large enough to go out into my pond, having been weaned further on to sinking pellets.

J. Tapner,  
Merseyside.

Dear Sir,

I am a freelance photographer, working for the Daily Telegraph magazine, looking for suitable 'amazing aquariums' to feature in a proposed photo story?

I would be grateful if any readers or members of local Aquatic Societies in the south-east owning such aquariums (or knowing of the whereabouts of any) could get in touch. I am not averse to travelling reasonable distances and, of course, I would provide sets of prints for them as a thank you for their co-operation.

I can be contacted on 0171-700 1916; if I'm busy don't be put off by the answerphone — DO leave a contact number.

Nick Waplington,  
Islington.

One of  
Europe's  
leading  
Airfreight  
agents and  
distributors  
for  
Tropical Fish,  
Coldwater  
Fish and  
Plants into  
the trade

FORWARDING INTO THE FUTURE  
**Airfreight**  
2000 Ltd

INTERNATIONAL  
FREIGHT  
FORWARDERS  
TO THE  
PET  
INDUSTRY

All enquiries welcomed and dealt with in strictest confidence

WE HANDLE OVER 20  
WORLDWIDE SHIPMENTS  
PER WEEK INTO  
LONDON AND MANCHESTER

All Sales Enquiries:

Unit S38,  
Moulton Park Business Centre,  
Red House, Moulton Park,  
Northampton  
Contact Dee or Rob  
Tel: 01604 497586  
Fax: 01604 497587

Manchester Office:

Unit 7,  
Building 308,  
World Freight Terminal,  
Manchester  
M90 5PZ  
Tel: 0161 4990123  
Fax: 0161 4990188

Accounts,

Administration & Overseas  
PO Box 63, Wakefield,  
West Yorkshire  
Tel: 01924 252828  
Fax: 01924 255543

Strictly trade enquiries only

# UNDERCURRENTS OF POWER

**T**he deep turbid waters of the Amazon and Orinoco rivers are home to a creature which can legitimately lay claim to being the most powerful fish on earth.

A large mature specimen having the potential to fell a horse or stun a man. But this is not a power measurable in terms of physical strength but one far more subtle, remarkable and, in many ways, more deadly ...

*A flash of light streaks across a darkened and angry sky — a primeval landscape becomes momentarily illuminated before its tranquillity is shattered by the deafening roar of thunder as atmospheric gases react to the lightning's heat.*

If such a demonstration by the elements was primitive man's first, albeit unwitting, experience of an electrical discharge, for aquarists it is most interesting to consider what may have been his second. For in all probability this will have occurred courtesy of the fish, and in a far more practical form.

In today's hi-tech environment we are all increasingly reliant upon electronic technology in almost every area of our lives. But when contemplating the astounding advances which have taken place in recent times it is all too easy to overlook the fact that, on any sort of commercial scale, electricity has only been available to us for a little over 100 years, so we really are relative newcomers to this most adaptable energy source. Certain fish on the other hand have, since time immemorial possessed the ability not only to generate and discharge electricity, but also to use it in a highly controlled manner in the most ingenious and sophisticated ways precisely suited to their requirements for survival.

Complex electrical systems for use in communication, location, navigation, defence and attack may all be fairly new to us — but not to fishes, for they have

## ROY OSMINT PROBES THE SHOCKING WORLD OF ELECTRIC FISHES.

been successfully using them in some cases for millions of years.

All animals, including humans, do of course produce small amounts of electricity in their nerves and muscles. In fact it is the very essence of life and movement in all living matter. Each time a muscle action takes place it is preceded by an electrical impulse from a nerve. As this happens continually, whether active or dormant, there is consequently an endless stream of tiny electric messages being generated and dispatched throughout the body. Some fishes have taken this production many stages further by evolving the ability to generate excess electricity which is then channelled into a variety of other uses. Why is it then that fishes, alone among vertebrates, have been so successful in this respect whilst land based animals have not? The simple answer lies in the medium in which they exist — for water is a better conductor of electrical current than atmospheric air.

The majority of electric fishes are found in the fresh waters of South America and Africa, although there are a number of interesting marine forms. They can all initially be divided into two distinct categories 'weakly electric' and 'strongly electric', the former discharging a current sufficient to establish an electrical field for navigation, detection or communication with the latter generating a much greater power capable of killing prey and/or deterring predators. Some species can do both.

Fishes that fall into the category 'strongly electric' are the Electric Eel (*Electrophorus*), Electric Catfish



The Elephant-nose, *Gustafsonius petersi*, 'navigates' by using electric forcefields.

PHOTO: M.P. S.C. PREDNOR

(*Malapterurus*), Torpedo Ray (*Torpedo*) and the Stargazer (*Astrascopus*). 'Weakly electric' examples include the Elephant-nose (*Gustafsonius*), Skate (*Raja*), Knife-fish (*Gymnotus* and *Sternarchus*) and the African oddity, *Gymnarcus niloticus*.

The size and position of the actual electrogenic organs varies considerably among species. These are normally formed from modified muscle tissue which no longer possesses the capacity to contract. Cells called electrocytes provide the source of the electric current. These natural batteries (controlled by specialized nerves) are generally arranged in series among freshwater electric fishes and in parallel in marine species. The former configuration produces much higher voltages.

That there was something different about the 'strongly electric' fishes has of course been known from earliest times as these creatures demonstrate their powers in far more obvious and painful fashion. The Electric Catfish for instance was certainly well known to the Ancient Egyptians for it appears prominently in

their tomb paintings and bas-reliefs dating from 2750 BC. Hieroglyphics from a much earlier period make reference to it as 'he who releases many' — suggesting that a fisherman hauling in his net containing an Electric Catfish may well drop the net and release the



entire catch upon receiving a substantial shock!

Electric fish were also quite widely used by the ancients for treating gout, headaches and other maladies. An Electric Catfish or Torpedo Ray would be carefully applied to the affected area and the patient's suffering apparently relieved by what must be the earliest form of electro-therapy.

The Roman naturalist Pliny knew that when amber, a yellowish translucent fossil resin, was briskly rubbed with fur or feathers, it exhibited a frictional power. Later comparisons between this and other things (including the discharge from the Torpedo Ray) gave us the term 'electric'

Electric catfish.

PHOTO: LINDA LEWIS

after the Greek word *elektron* meaning amber.

It is only in comparatively recent times that we have come to understand the subtle ways in which 'weakly electric' fish function, for it was difficult to detect their secrets without the advantages of our own modern techniques.

Among the examples, the Elephant-nose fishes are of considerable interest. There are about 100 species in the family and all possess the curiously extended trunk-like appendage to some degree, with the modification at its most extreme in *Gnathonemus zephus*. The electric organs of these fishes, situated at either side of the caudal peduncle, establish an electrical field around the fish from which it is able to gather and process data for navigation and orientation purposes, especially useful in low visibility water conditions. At the tip of the non-flexible tubular snout is a tiny mouth with few teeth, the lower lip is equipped with a touch sensitive appendage making it ideal for probing for small plants and

animals in mud, sand and between stones. The eyes are generally small, consequently sight is poorly developed.

A close relative of the Elephant-nose is *Gymnarcus niloticus* from Gambia though this fish is more eel-like in form and has a far less modified mouth section.

Electric fishes of this group also respond to the electrical discharges of others of the same species: to this end they are capable of varying their own rate of discharge so as to avoid confusion and interference with their electro-location systems. In this way a form of communication between individual fishes may also be possible.

Perhaps, understandably so, it is the 'strongly electric' species, the real high-powered heavyweights that have aroused the greatest interest and stimulated countless imaginations. These really do pack a punch and their potency should not be underestimated.

The principal fishes in this category include both freshwater and marine species. Although there is considerable variation in their actual voltage outputs, overall effectiveness has to be considered allowing for the conductivity differences between the two water types. As we already know water is generally a good conductor of electrical current, but salt water is very much better; therefore marine fishes may require a lesser voltage output to achieve a similar effect. On the other hand, because of this very high conductivity, an electrical field in salt water is essentially short-circuited and greatly limited in range compared with that of freshwater.

Electric Rays, 'strongly electric' marine fishes, are distributed in warm and temperate seas across the world. There are about three dozen species which



## TROPICAL Undercurrents of Power



This electric navigator, *Petrocephalus levi*, lacks the characteristic 'trunk' (it's really the lower jaw) of the Elephant-nose family.

PHOTO BY S. C. REYNOLDS

vary in size from 2m (6ft) in the case of *Torpedo niphilina*, to about 30cm (1ft) for the smallest *Narcine tasmanicus*.

The majority inhabit comparatively shallow waters but this is certainly not universal, with some living at depths in excess of 1000m (3,300ft). They are generally smooth skinned with the head and pectoral fins forming an almost circular body disc. A short slender tail is present in most varieties. Located at either side of the head are the electric organs which, in an average-sized fish may generate around 60-70 volts, but a large mature specimen may produce voltages in excess of 200.

Electric Rays spend much of their time dormant on the seabed becoming active only when hungry. Their diet consists mainly of fish and small crustaceans which they often pounce upon and envelop in the pectoral wings before stunning with an electric charge.

Another electric fish on the ocean floor is the aptly-named Stargazer (*Astriscopus*) which has eyes situated on the top of its head. This sturdy fish has a decidedly upturned mouth edged by large fringed lips. A small appendage on the lower jaw can be made to vibrate luring inquisitive fish towards it as it lies partially concealed on the sandy bottom. The Stargazer's actual electric organs are located immediately behind the eyes and are used to both stun prey and to discourage would be aggressors (a sharp venomous spine to the rear of the

operculum in some varieties is also an effective deterrent!). This fish reaches an average length of some 30cm (1ft) and can deliver around 50 volts. Its ugly appearance has earned it the name in some regions of 'Electric Toad.'

The tropical freshwaters of Africa, including the Nile valley, are home to the remarkable Electric Catfish (*Malapterurus electricus*) the only member of the family Malapteruridae. This is a very powerful fish indeed, both in terms of body strength and electrical discharge, reaching a length of around 1.2m (4ft) and weighing some 23 kg (51 pounds). It has a general greyish brown colouration, lightening to a flesh tint around the head and on the underside, with a covering of irregularly-spaced (and sized) black spots. There are six barbels around its large mouth, it has small eyes and lacks a dorsal fin, the only fin present on its back being an adipose fin just forward of the rounded tail. The electrogenic organs extend over a large section of the central body area, the positive pole being at the rear end with negative at the front. It uses its electrical power to capture prey and to defend itself, a large specimen can produce up to a staggering 450 volts. Often the first shock will be immediately followed by a series of lesser ones.

But even the extremely impressive electrical power of this Catfish tends to be overshadowed by the phenomenal output potential of another freshwater

species from South America — the Electric Eel (*Electrophorus electricus*) the most powerful electric fish on earth. This Eel inhabits murky slow moving waters where it can reach a length of up to 2.75m (9ft) and a weight of around 40 kg (88 pounds). The cylindrical body is scaleless with a uniform olive-brown colouration. There are no fins present on the fish's back and about four-fifths of the total body length is made up of the tail section. Movement is controlled by a large undulating anal fin which extends from the tip of the tail to virtually the throat.

Because of its huge tail section the Electric Eel's internal organs are all congestedly accommodated into a small space just behind the head. The electric organs, made up of thousands of individual elements arranged like the cells in a dry-battery, are distributed right along the sides of the tail and account for about half the fish's total body bulk. It is because these elements are arranged in series, and that the fish is able to achieve synchrony of discharge, that such powerful electrical output becomes possible. A fully-grown Electric Eel has been recorded as generating almost 650 volts — sufficient to kill a man or bring down a large horse at a distance of some 6m (20ft). Although it uses its power to kill fish and small animals, in some cases it will allow the bodies of its victims to decompose a little before consuming, presumably making a more appetizing meal! An interesting fact is that the Eel has its positive pole towards the head with negative at the tail end, a complete reversal to that of the previously-described African Catfish.

The world of fishes exhibits some of the most remarkable evolutionary characteristics to be found anywhere within the animal kingdom, and none more so than in the fascinating electric fishes of our great rivers and oceans. Since the dawn of time they have ingeniously developed the ability to generate, and diversely exploit, a form of energy that was to eventually revolutionise our own world. Perhaps in this context 'fish and chips' begins to take on a new significance with the electric fish having pioneered the way for the silicon chip.



# Pond Diary

## MARCH 1996

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

**Susan Stephenson** presses the starter button on the pond season.

March is one of the busiest months for the pondkeeper as it is the start of the most active time of year for both plants and animals that inhabit the pond area.

A combination of longer daylight hours and a slow

increase in air temperature mean fish start to become more active, so feed them when necessary but use floating pellets initially so that no more is given than the fish can eat in about five minutes, so excess food does not

March is an ideal time to introduce a frog population to the pond.

PHOTO:  
LINDA LEWIS



contaminate the water.

Particularly in a small pond, the water may appear cloudy due to decaying matter from aquatics that died back during winter. In this case, a partial water change is needed. One way to achieve this is to use fresh water trickled in from a hosepipe and allow excess water to gently overflow. This is fine where there is quick-draining soil around the pond and the water will not become a hazard. Otherwise, drain half the pond water using a pump and hose into a soakaway or drain and refill using a trickling hose. A water change benefits plants and fishes by reducing the concentrations of toxic and salts accumulated over the cold period. Lowering the water level also allows inspection of the pond for wear and dirt; if the pond needs a clean, do it now before it becomes too disturbing for new growth to do so.

Plants should be inspected to ensure they are free of signs of parasites or disease. Remove the winter coverings of marginal plants that were left in place to give protection.

March is the time to introduce a frog population to the pond if required. Collect clean spawn when it appears, usually early in the month, and gently transfer to the pond but only remove small amounts of spawn from a wild population. Tadpoles do a lot of good in a pond as they actively assist in the Spring clear-up of old aquatic remains.

Reinstate any filters that were removed, or turned off, over the winter after giving them (and the pump) a clean.

If algae is present, remove it using a stout stick to twist the masses together before lifting out. Be careful not to remove water snails or the turions (winter buds) of plants such as *Hydrocharis* (Frogbit) or *Utricularia* (Bladderwort).

If growth the previous year was poor, scrape away some of the soil from around the Water-lilies and marginal plants and

top-dress with good fresh soil and a fertiliser. Baskets in the pond can be raised and replanted if the plants have become too rampant to divide. Examine your plants and be rigorous, throwing out any plants that are weak, too tall or vigorous and replace them with more suitable varieties.

Towards the end of March is a good time to plant a bog garden with waterside plants such as Primulas and ferns. Use soil which is loam mixed with an equal amount of sphagnum peat of medium or coarse texture. Dust with a suitable, safe fertiliser. To get ground cover quickly, plants in the bog garden can be planted a little closer together than usual. This will also discourage weeds.

Some jobs for March can be time-consuming but good preparation now makes a good environment for vigorous and prolific plant and animal life in, and around, the pond for the rest of the year.

## Useful March Tips

- Check equipment removed in the autumn and put it back in the pond as soon as frosts have ceased. Examine everything for wear and tear, especially cables and connections. Grease pins on plugs to ensure a good contact.
- For first feeds of the fish try to feed around mid-day when the comparative warmth of the afternoon will aid digestion. Do not be afraid to stop feeding if cold weather returns.
- No matter how warm some days may appear towards the end of the month do not be tempted to begin planting out seedlings, or putting non-hardy plants out because severe frosts can still return!

## WORLD OF KOI ANNUAL SPRING AUCTION

BANK HOLIDAY MONDAY 8TH APRIL

DOORS OPEN 10AM — BIDDING STARTS AT 12 NOON

OUR FIRST AUCTION OF THE YEAR WILL HAVE OVER 100 LOTS AND WILL INCLUDE FISH FROM 4"-24". SPECIAL OFFERS ON THE DAY

FOOD AND DRINK AVAILABLE ON THE DAY

CALL 0181 462 9479 FOR MORE DETAILS

BENCEWELL FARM, OAKLEY ROAD, BROMLEY, KENT BR2 8BR

## THE TRUTH IS IN

"The Perfect Pond Recipe Book"

by PETER J. MAY

The landscaper/garden designer specialising for 15 years in water gardens, confesses all in graphic detail.

ALL the tricks of the trade are laid bare in the creation of ALL types of water gardens using ALL manner of materials and equipment.

Send cheque or P.O. for £2.95 to:

PETER J. MAY, Stoney Batch, Street End Lane, Blagdon, Avon, BS18 6TW. Tel: 01761 463385.

# KOI Q&A

**Q** Until recently all my 14 Koi were healthy. I then bought a new fish from a reputable dealer and it died ten days later.



Good water quality is of the utmost importance for the long-term well-being of Koi. PHOTO: GORDON WIGENS

It had no external signs of disease. Since then I have lost three other fish, even though they had earlier tried to spawn.

I have treated the pond with formalin, malachite green and salt but these fish are now less 100%. One, in particular, appears to be breathing heavily. Please help.

**A** It is almost impossible to diagnose the exact cause of the problem at a distance. Certainly, the cause is not connected to any spawning problems, but to diminishing water quality or parasitic infestation. Sometimes, excessive water changes, or changes with poor-quality tapwater can create serious problems.

I am never in favour of treating pond water UNTIL you are absolutely certain that the chemicals you are administering are correct for your specific problem.

I would also strongly advise that you join your local Koi club, where a vast amount of genuine knowledge and help can be offered to you freely and accurately.

I have taken steps to pass on your problem to experienced Koi keepers in your area; briefly explaining to them your specific problems.

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

## FISH WORLD Magazine.



Name: \_\_\_\_\_

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

Post Code: \_\_\_\_\_

Society if any \_\_\_\_\_

Send your cheque or postal order to:  
Fish World Magazine, Dept QB, 14 Upper Dane Road,  
Margate, Kent CT9 2LX  
Please make cheque payable to F.B.A.S., THANK YOU

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.

## QUALITY KOI COMPANY

Britain's Most Popular Koi Store since 1985  
Large Tropical Fish Department



Trade/Retail  
Mail Order  
Koi  
consolidation

- ★ Superb Selection of Koi
- ★ Good wild caught Discus
- ★ Full quarantined

Free Brochure/Price List — includes UV's, Pumps, Liners (from 23p per sq ft)

- ★ Hi-Tech Trickle Filters, Vortex, Matting, Foam, Bottom Drains, Fittings and Pipework, Purifiers, Pond Vacs, Nets, Granite and Concrete Ornaments
- Foods including Hikari, Beauty, Phoenix, Pro-Koi, Tetra, Economy, Goldfish Flakes.

All Tropical Foods, Aquariums, Cabinets, Aquarium Filters and all Accessories.

IN FACT EVERYTHING FOR THE TROPICAL AND COLDWATER AQUARIST

### SPECIAL OFFERS

- ★ HUGE PRE-SEASON KOI CLEARANCE SALE — SAVE UP TO 50%
- ★ THOUSANDS OF ITEMS AT TRADE PRICE OR LESS
- ★ JOHN IS VISITING JAPAN AGAIN BUYING SUPERB KOI TO OFFER QUALITY AT AFFORDABLE PRICES

Thousands of items at trade price or less

BRIDGE END, BRIGHOUSE, W. YORKS HD6 3DN  
Tel: 01484 722015. Fax: 01484 400515

Open 6 days, 10am to 6pm. Closed Wednesdays.  
DIRECTIONS: EXIT 25 OFF M62 THEN 1 1/2 MILES (opposite Star Pub)

WE STOCK SOME OF THE BEST KOI IN THE UK

# TECHNICALITIES for beginners

## Maintaining your aquarium — effectively

### The heart of the matter

The biological filter is the "Heart" of any filter system from undergravel to wet/dry to fluidised beds. The two species of bacteria cultivated for this purpose are *Nitrosomonas* (for ammonia-nitrite conversion) and *Nitrobacter* (for nitrite-nitrate conversion). Once this "heart" (bacteria) is pumping correctly (reducing wastes) your system is said to be "matured."

These days the easiest way to begin the maturation cycle is to purchase "living" strains of *Nitrosomonas* bacteria in a bottle. Various brands are available from your aquatic dealer, but the end results are the same, some dealers have preferences, through first hand knowledge of using a particular product. By using one of these "live strains" the colonisation of the bacteria in the system is speeded up dramatically. A point worth remembering, is that aquarium remedies (copper-based) can, if overdosed, kill a good percentage of nitrifying bacteria in your system thus in effect interrupting the operation of the nitrogen cycle.

The use of good quality test kits is of paramount importance, with the need to test for ammonia and nitrite, critical, especially if the system is new or livestock are being added. *Nitrobacter* tend to take longer to establish themselves, but cultures are available to speed up the process, again a good Nitrate test kit is a worthwhile investment. Once the "Heart" of your system is functioning correctly, other water parameters need to be monitored regularly:

PH: Needs to be adjusted,

and or stabilised depending on fish species to be kept. Products are available for this purpose.

Temperature: Adjusted as required for species to be kept and fluctuations to be kept to a minimum.

For serious aquarists the above points are checked on a regular basis and are not considered a Chore. For new aquarists coming into the hobby, a good routine from the outset is invaluable and listed below are some "Golden Rules" to observe. Always remember — Minimise inputs and Maximise outputs — in hobby terms, this means put as little as possible in the tank which may upset the occupants (and that includes your hands!)

(1) Regular Water changes. Fortnightly/Monthly, but never more than 25% of the tank capacity at once. Smaller (say 10%) are better as this causes less stress to the fish.

(2) Always use dechlorinated or better still, R/D or de-ionised water for water-changes or top-ups, bearing in mind species being kept (as some fish actually like hard water).

(3) Gravel cleaning if an undergravel filter is fitted. Gravel Washers are inexpensive tools for sifting the substrate for dirt particles which help keep the filter from compacting.

(4) Observe your fish/inverts regularly for signs of disease and combine

this with your water testing regime.

(5) Check filter outputs and medias for clogging.

(6) Keep a note of how long Bulbs/Tubes have been operating and replace on average every six to nine months.

(7) Feed sparingly and ensure a mixed diet of flake, frozen and live food is offered for proper nutritional requirements. Remember "Variety is the spice of life".

(8) Provide water movement (surface agitation) for correct gaseous exchange, by providing powerheads or internal/external filters fitted with spraybars etc.

(9) Acclimatise new fish/inverts to the aquarium slowly: turn off aquarium lighting, and mix a little water from the tank to the water in the transportation bag(s) every few minutes.

(10) Avoid STRESS!!! at all times (and that includes the hobbyist, especially when trying

This month **PETER MOON** looks at ways of insuring that the inhabitants of our aquariums are provided with the best conditions available and, also, to investigate some of the hi-tech equipment available to the hobbyist today.

to catch elusive fishes who don't want to be caught!).

The above points are designed for guidance, so that individual aquarists can devise their own maintenance programme to suit their particular situation and animals being kept.

### New innovations in aquarium maintenance

My own company distributes products under this heading, so you could say that I am at the sharp end to some degree. Let's have a look at some fairly new products on the market, aimed at the more discerning, or technically-minded aquarist.

#### Fluidised Bed Filters

These have been in



PHOTO: AAP LIBRARY

aquaculture for the past decade, running large commercial fish systems in Zoos, Public Aquariums, Research facilities, Retail outlets etc. so, in essence they are not new — just subsequently scaled-down units now made available for the aquarium market. The principal is very simple, water is pumped from the aquarium into the fluid bed (base) this in turn suspends the media (special silica sand) in the water column. The media has a very large surface area for bacteria to colonise and, because the water passing through the bed is highly oxygenated, the bacteria thrive in this environment; "dead spots" and channelling (bypassing the medium) are eliminated. The water returns to the aquarium via an outlet mounted on top of the unit. Please remember these filters are biological in action (see earlier) with very fast ammonia to nitrite removal when matured.

#### Digital Monitors

Are these new? Well, certainly different ones are appearing and more will follow. I personally (not intended as an endorsement) use the Pinpoint monitors from American Marine Inc (See Freshwater and Marine Aquarium Magazine) namely for monitoring PH, ORP (Redox) and Salinity. They incorporate an LCD screen, on/off switch and probe, are battery or mains operated and can be mounted on the wall or used freestanding. The overall quality and accuracy is good and calibration of the units easy. Other monitors are available from reputable suppliers and all use state-of-the-art microchip circuitry, perhaps the most common example of which is that designed for use with aquarium heater/stats.

#### Canister Filters

Wet-Dry filters housed in a canister. Available in both internal and external variations, certainly you get the best of

both worlds here, offering not only along with chemical filtration, ammonia to nitrite and nitrate conversions but, in some models, nitrate removal too. I have heard good reports on these filters, but have not used one personally.

#### Cable Ties

Yes, you can now run all your electrical equipment into a state of the art microchip box, with LED lights to assist you, but you still end up with a load of wires (reminiscent of a Hi-Fi system) trailing out the back.

#### Wave Makers

Electronic switching devices for powerheads (see TFB, A&P January 1996), again microchip circuitry aiding the aquarist.

Various models available, some will accommodate up to four powerheads in constant, sequential or random mode — great for reef tanks.

*The above are just a selection of new and recent innovations available to the aquarist, more will follow for sure, but as long as our main interest centres around the beautiful animals we keep in our aquariums, rather than concentrating on an array of "dials, screens and flashing lights", our understanding of our watery friends will be better rewarded. I would like to thank Mr Terry Evans of Wetpets for his unbiased assistance in preparing this article.*

Next month we will be looking at living rock — the natural Biological Filter:  
Until then, Happy Fishkeeping!!

OMEGA  
OFFER

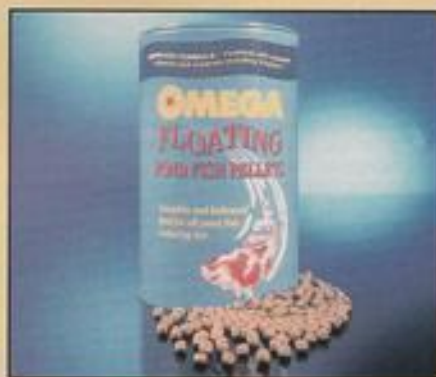
## Omega's improved formula offers stress free diet

Are your pond fish suffering from stress? As water temperatures warm up during the spring and fish begin to feed once more,

feeding poor quality food — or overfeeding can pollute the water, creating stressful conditions for fish, according to Omega, manufacturers of specialist pond fish food.

"With a poor quality food, undigested proteins pass straight through the fish, creating a build up of undesirable ammonia-based compounds in the water," says Omega's nutritionist, David Livingston.

Omega's improved formula floating pond fish pellets are produced to the highest quality specifications. They are fortified with vitamins and minerals, including vitamin C and selenium and the improved formula has been specially developed by Omega to contain the correct level of



All you have to do is send a postcard with your name and address to the address below and the first 100 to be drawn after 31 March 1996 will each receive a 225g tub of Omega Floating Pond Fish pellets, worth £1.79. Send your entry to: Omega/A&P Offer, Edward Baker Ltd, Windham Road, Sudbury, Suffolk CO10 6XD.

protein and a range of nutrients vital for good growth, health and vitality for all pond fish, including Koi.

Omega Pond Fish Pellets are fully cooked to aid digestion, ensuring the fish absorb all of the essential ingredients. The pellets sink gradually, allowing fish to feed at any depth.

"Feeding the correct amount of good quality pond fish food such as Omega not only helps the fish to thrive during the spring and summer months, it also means they will be in good shape to cope with the stress of the winter months," says David Livingston.

Omega's improved formula floating pond fish pellets are now available from all good pet and aquatic stores in handy 225g tubs as well as economy 15kg sacks. Both sizes are on special offer until the end of March 1996, but we are giving 100 Aquarist & Pondkeeper readers the chance to try improved formula Omega for free.

# It Seems To Me ...

Andrew Werendel's focus of attention this month is on choosing a suitable aquarium filter.

"To filter or which filter?" That is the question ... (with apologies to the Bard).

example, one 4ft filter I have seen turns over 1,500 litres per hour, another 1,000 litres

— source Eastern Electricity). Also look at your guarantee

— most are one year — some are two years, and that extra year's peace of mind is well worth it.

A handy thing to look for are sponges with carbon — some models have this facility, others do not.

Many now have venturi, variable flow controls, variable directable outlets built-in: a quick, lift-off facility makes for easy removal for cleaning leaving the mounting bracket and impeller behind still attached to the aquarium.

hour extra consumption = £10.51 extra electricity per year saved by buying the Eheim — makes sense doesn't it? Some of the latest filters have very easy opening canister mechanisms, quick-release couplings, with highly-practicable isolating taps and media baskets built in. These also have a two year guarantee.

These are just a few of the considerations you might care to bear in mind when deciding upon a filter for your aquarium but, in the proverbial nutshell — you pays your money and takes your choice (I don't think the Bard thought up that one!).



These days the array of filters, internal, external and the like is vast and bewildering and so here are some pointers:

## Internal filters

Look for a filter which turns your volume of aquarium water over about three times per hour. Ignore advice on boxes i.e. for a four foot aquarium and above.

I have looked at this kind of packaging before and dismissed it. Would you like to live your life as a fish constantly fighting against a strong current? This is exactly what happens. For

per hour; you only really need about 500 litres per hour. Another downside, your plants are knocked flat with the force and struggle to survive — and of course these filters use extra electricity!

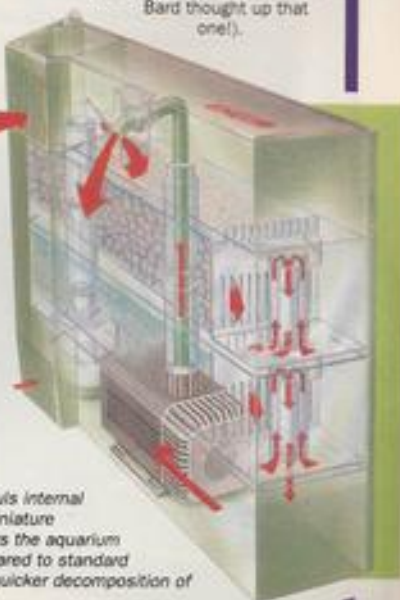
For example, if you compare an Eheim 2010 internal (5.5 watts) with a competitor's (15 watts) you would consume £8.32 less electricity per year by using the Eheim. Think about it — after six years your Eheim is free! Whereas the internal you may have bought would have cost you the original price, say £50, plus six years of electricity at £8.32 per year more (assumes electricity at 10p per kilowatt

## External filters

All the previously mentioned points equally apply to external models.

Making similar consumption comparisons, an Eheim 2213 has a meagre electrical appetite of 8 watts compared to a competitor's 20 watts. Using the same formula, 12 watts per

The revolutionary AquaPuls internal filter works just like a miniature purification plant. It filters the aquarium water biologically. Compared to standard filters, it boasts a 50% quicker decomposition of ammonium.



**AQUARIST  
& PONDKEEPER**



# WIN A WEEKEND FOR TWO AT GROCKLEMANIA '96

A&P and Hagen have teamed up to provide a fabulous prize for A&P readers.

Win a weekend for two people at this year's 'Grocklemania' — the highly-successful annual fishkeeping event held on the Isle of Wight throughout the weekend of 17-19 May — and held at the Island's largest holiday centre, Harcourt Sands Holiday Camp, near Ryde.

The prize includes accommodation and meals (breakfast lunch and evening meal, from evening meal on Friday to lunch on the Sunday), as well as your ferry crossing. All the facilities of the holiday centre are available, including a superb indoor leisure complex with flume and bubble-pool, sunbeds, sauna, nine-hole golf, ten-pin bowling, adventure playground, gym.

The theme of the weekend is "The Swinging 60's" and cabaret guests include The Fortunes, Lieutenant Pigeon, The Over-the-Hill Mob, and Fred the Ted.

A comprehensive range of aquatic events and attractions will be taking place, including the Hagen Helpline, exhibition displays, demonstrations, talks, and the Central Southern Area semi-final of the AquaChamp Quiz.

## THE COMPETITION

All you have to do is answer the following easy questions. Fill in your name and address details on the form and post to: Hagen 'Grocklemania' Competition, A&P, MJ Publications Ltd., Caxton House, Wellesley Road, Ashford, Kent TN24 BET.

Entries must be received by Friday 26 April and the first correct entry drawn will receive the prize.

NAME .....

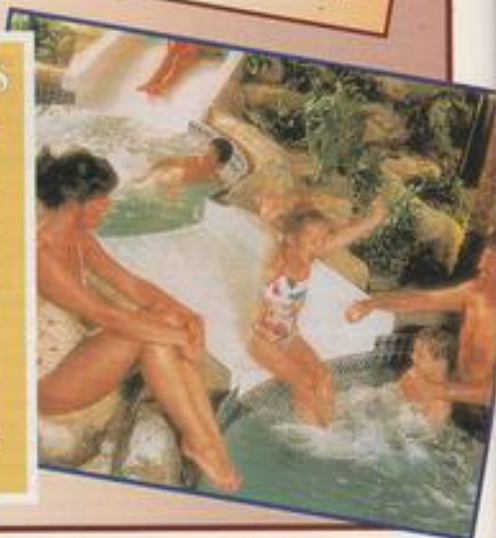
ADDRESS .....

TEL. NO .....



## QUESTIONS

- 1 What is the largest holiday centre on the Isle of Wight?
- 2 Give the rank of the pigeon appearing as part of the cabaret.
- 3 Name the era on which the entertainment will be based.





## SOCIETY MEMBERS!

Get A&P each month, and save money in the process. Take advantage of this Very Special Offer made by MJ Publications Ltd., publishers of A&P.

Societies can order A&P in bulk (12 copies or more) for their members at a Privilege Price of £1.50 per copy plus £4 postage. No more journeys to the newsagent, have A&P waiting for you each month at your Society meeting. Simply send in a cheque/P.O. for the required number of copies, plus postage, to: A&P SOCIETY COPIES, MJ Publications Ltd., Caxton House, Wellesley Road, Ashford, Kent TN24 8ET, and we'll do the rest.

## New venue for Norwich Society

Thorpe and District AS of Norwich has changed its meeting venue to The Norfolk Dumping, Norwich Livestock Market, Hall Road, Norwich; and the Society will meet on the third Monday of each month.

For details, contact Secretary: Derek Wyer, tel: 01603 613775.

## K.A.A.S. Convention

The 1996 K.A.A.S. Convention will be held on Saturday 16th March beginning 12 noon at the Ambassadors Hotel, 63-73 Norfolk Road, Cliftonville, Margate, Kent (01843 292113). The Speaker will be Wilhelm Heinz who will present a Cichlid Menu programme of talks whose subjects will be selected at random by the audience. There will be an Auction and the Final Round of the Inter-Society Quiz. Tickets, price £10.00, and only available in advance from Dave Goodwin (tel: 01304 381721). Overnight accommodation can be arranged, at extra cost, if required but arrangements must be made direct with the

Hotel.

Further information from Dave Goodwin (see above) or from John Edwards (tel: 01843 291750).

## Golden Jubilee meeting

FBAS Vice-Chairman Jack Stillwell uncovers a special Anniversary occurring this month

As the Federation of British Aquatic Societies meets on the first Saturday of March, for its quarterly General Assembly, I wonder just how many delegates and visitors attending will be aware that it will be 50 years of the first meeting the Federation held, after the end of the War, on March 2nd 1946.

At that time, the Chairman was Alec Frazer-Brunner and the Secretary H.J. Dunbar. Meetings were held at the Friends Meeting House, Euston Square, just up the road from our present meeting place at Red Lion Square. The FBAS published its aims and policies for the future and maybe we could spare a moment or two to consider them now? I quote from the Minutes of that Meeting:

The Federation's original aims were to co-ordinate the

activities of Clubs in the general interest of the hobby; to encourage and stimulate inter-Club Shows and competitions; to encourage and assist breeders; to establish National Standards in order to increase and improve livestock; to help in the formation of any new Clubs and the development of smaller ones and to make available specialised information and authoritative lectures. At this meeting, it was agreed that these aims should again be adopted.

It was proposed and agreed that each Club should be entitled to send two Delegates to each Meeting. It was thought desirable that a Club in sending delegates should choose one who could attend regularly over a long period in order to ensure continuity of work whereas the second Delegate could be changed frequently, giving all members of the Club an opportunity of seeing the Federation in action. Pending discussions by Clubs, decision as to whether each Club be given one vote, or a card vote system be adopted, was deferred.

On the question of finance, two schemes were considered

possible; firstly a capitation fee of 1/- (5p) per member per year (whereby the larger Clubs would pay more than the smaller, or a standard fee for all Clubs irrespective of size. This choice was referred back to the Clubs for discussion, and to be decided at the next Meeting.

Officers elected for the ensuing six months were: Chairman, Mr Alec Frazer-Brunner; Vice-Chairman Mr L. C. Mandeville; Secretary Mr H. J. Dunbar; Treasurer Mr F. J. Boardman.

The next Meeting will be on April 6th at Friends Meeting House, Euston Square London at 2.30pm. Clubs wishing to send Delegates should communicate with the Secretary.

Just how far have we achieved those early goals or have we done far better than was hoped for, even in those ambitious euphoric days of peace?

## Bradford's great 1995

Secretary A. D. Fisher reports that Bradford & District had a great '95 season with Society

## DARENTH DISCUS

WE DON'T SELL CHEAP R.O.s — WE SELL R.O.s CHEAP

Darenth Discus are proud to announce that we are probably the largest combined private supplier of: REVERSE OSMOSIS SYSTEMS, WATER PURIFIERS AND DISCUS BRED ON OUR OWN PREMISES.

WE BREED AND SELL SOLID GERMAN COBALTS, STEEL BLUES, RED DRAGONS, AMERICAN RED PANDA'S, SCHLINGMANN REDS, RED AND BLUE TURQUOISE, FROM 1 1/2" TO BREEDING PAIRS COME AND SEE OVER 1,000 DISCUS BRED IN

### DARENTH DISCUS R.O. WATER

R.O. UNITS FROM £85 • DISCUS FROM £5 EACH

We would like to announce that we have no connection in any way with PANGURBAN CO. LTD., the holding company for Purity on Tap, Gemini Purifiers, Lazy Afternoons Ltd., La Compagnie De Provence Ltd. or any other major supplier.



FOR MORE INFORMATION TEL



DARENTH DISCUS 01322 864475

Tableaux wins at Yorkshire Aquarist Festival (1st) followed up a third place at the British Aquarists Festival. The Society's own Open Show was a resounding success, lots of fish and visitors. Members were just as successful at 'away' Shows as they were at their own internal competitions, notable winners being Fish of the Year — Julian Hobson.

Most Success at Open Shows — Anthony Fisher.  
Most Success at Table Shows — Alan Bradley.  
Most Success at Members Show — Julian Hobson.  
The Society meets at Clayton

Village Hall, Reva-Syke Road, Clayton, Bradford at 7.45pm on the 2nd and 4th Tuesday of each Month. Contacts: Secretary A. D. Fisher 01274 590608 Chairman Raymond Stansfield 01274 595097.

## York needs you

York & District A.S. meet every 2nd Tuesday of each Month at the Frog Hall Public House, Layerthorpe, York. Anyone interested contact: Alan Holmes 01904 414272 or Neil Ferguson 01904 794966.

## 1996 OPEN SHOW DATES

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

- |  |   |
|--|---|
| 3 March Burley in Wharfedale A.S. (Y)                    | 19 May Isle of Wight A.S. (Grocklemania) (FB)     |
| 10 March Greenock A.S.                                   | 2 June Erith DAS (FB)                             |
| 31 March Eastleigh A.S. (FB)                             | 9 June Merseyside A.S. (FN)                       |
| 31 March Northampton A.S. (FB)                           | 9 June Redcar A.S., NEFAS (FS)                    |
| 5/7 April Strathclyde Fishkeepers Festival (FS)          | 23 June Workington A.S. (FS)                      |
| 7 April Malvern A.S. (FB)                                | 30 June Seascale Juniors A.S. (FB)                |
| 7 April Oldham & D.A.S. (FN)                             | 6 July Port Talbot A.S. (FB)                      |
| 13/14 April Yorkshire Aquarists Festival (Doncaster) (Y) | 3 August Gloucestershire A.S. (FB)                |
| 21 April Halton A.S. (FN)                                | 10/11 August Koi '96 BKKS National Show           |
| 21 April Kirkcaldy A.S.                                  | 11 August Salisbury A.S. (FB)                     |
| 21 April Strood A.S. (FB)                                | 1 September Cramlington A.S. (FB)                 |
| 21 April Caer Urf A.S. (FB)                              | 1 September Dunstable A.S. (A)                    |
| 28 April Robin Hood A.S.                                 | 7 September Bristol A.S. (I)                      |
| 28 April Swindon A.S. (FB)                               | 14 September Hounslow A.S. (FB)                   |
| 4 May Southend, Leigh & D.A.S. (FB)                      | 28 September Bristol Trop. F.C. (FB)              |
| 5 May Aberdare A.S. (FB)                                 | 28 September Northern Goldfish & P.S. (I)         |
| 5 May Bracknell A.S. (FB)                                | 6 October Halifax A.S. (FN)                       |
| 5 May Gateshead A.S. (FB)                                | 6 October Washington A.S. & P. (FB)               |
| 5 May Musselburgh A.S. (FS)                              | 20 October West Cornwall F.K. (FB)                |
| 12 May Bournemouth A.S. (FB)                             | 1/3 November Supreme Festival of Fishkeeping (FB) |
| 12 May CAST 88 (FN)                                      |   |
| 12 May Corby A.S. (FB)                                   |   |
| 12 May Four Lane Ends A.S. (FB)                          |   |
| 19 May Cardiff & D.A.S. (FB)                             |   |

## DIARY DATES

- Cichlid Association
- 12 March — Plymouth & District AS — Table show, for labyrinth fish (except Ea. AOV Livebearers) at Plymouth Electricity Sports & Social Club, Armada St., Plymouth. For information, contact Ian Blackie, 55 Carnock Road, Manadon, Plymouth PL2 3SH. Tel: 01752 709599
- 19 March — South Park Aquatic Study Society, Stan Boddin's Bonsai Workshop & Discussion of National Standards. Contact Ken Seaton tel: 0181 641 2848
- 31 March — Halifax A.S. Auction of fish and equipment. Booking in not before 11am — not after 12.30pm. Start 12.45pm. Also refreshments, raffle. At Forest Cottage, Community Centre, Cousin Lane, Ovenden, Halifax
- 2 April — Gloucestershire A.S. Bell & Gavel PH, St Oswalds Road, Gloucester. Talk: Conservation of Marines. Table Show: Cichlids and A.O.V. Contact Andy 01452 372948 or Clive 01453 755450
- 28 April — Robin Hood Aquarists. Open Show & Auction, Highbank Community Centre, Farnborough Road, Clifton, Nottingham. Show Guide from: Ray Pearce, 515 Farnborough Road, Clifton, Nottingham NG11 9DH. 0115 974 4736
- Swindon A.S. Open Show. Cricklade Town Hall, Cricklade, Wiltshire. Contact John or Julia Wilson Tel: 01367 820329
- 28 April — Caer Urf A.S. Open Show. Perth Green Community Centre, Inverness Road, South Shields, FBAS Trophy Class 'L' (Loaches). Auction and Grand Raffle. Contact: Jim Mungrove, 0191 454 0676
- 3 March — Burley-Wharfedale A.S. Open Show, Collingham Village memorial Hall, Collingham, nr Wetherby, Yorks. Contact: Mrs J. Thurlby, 8 Norwood Avenue, Burley-in-Wharfedale, Yorkshire. 01943 862643
- 5 March — Gloucestershire A.S. Bell & Gavel PH, St Oswalds Road, Gloucester. Talk/Video: Livebearers. Contact Andy 01452 372948 or Clive 01453 755450
- Plymouth & District AS — Meeting, with talk on Corydoras Catfish by B. Walsh, at Plymouth Electricity Sports & Social Club, Armada St., Plymouth. For information, contact Ian Blackie, 55 Carnock Road, Manadon, Plymouth PL2 3SH. Tel: 01752 709599
- 10 March — The British Cichlid Association will be celebrating their 25th Anniversary Year Convention at Silkcoates School, Silkcoates Lane, Wrenthorpe, Wakefield, West Yorkshire. Guest Speakers are AD KONINGS talking on 'Cichlids of Lake Tanganyika' and FRANK WARZEL talking on 'Pike Cichlids'. In addition there will be a strictly limited 300 Lot Auction. Even if you are not a member do come along and enjoy the day, we are sure you will feel it well worth the effort. For further details of the event (generously sponsored by Animal House (UK) Ltd) please contact: Alan Hill, Tel: 0161 7972311. If you would like more information about the BCA please send a stamped, self-addressed envelope to: BCA, Dept APA, 70 Morton Street, Middleton, Manchester M24 6AY. If you would like a Sample Pack of publications please also include a cheque/postal order for £3.00 (payable to British

The new owners of A&P are pleased to confirm that support for the CHAMPION OF CHAMPIONS Competition at the British Aquarists Festival, organised by the Federation of Northern Aquarium Societies, is to continue.

Societies are invited to write to John Young (see address below) to obtain copies of the necessary Champion of Champions Registration Form. Following Societies' Open Shows, completed forms (showing details of winners, etc.) should be returned as soon as possible; owners of qualifying entries for the Champion of Champions Competition at BAF will be notified of final arrangements in due course.

Champion of Champions Registration Forms available from: JOHN YOUNG, 13 EAST COURT, NORTH WEMBLEY, MIDDLESEX HA0 3QJ.

Society World is provided to help all Societies to promote themselves and their activities. One of the most difficult tasks within any Society is that of Programme Secretary, who is expected to fill every meeting with something of interest. These columns are a source for all manner of ideas for Societies' entertainment, and could lead to many a Speaker finding fame (if not fortune!)

So do your bit to let readers know of your good fortune, whether you have found an excellent Speaker or have come up with good ideas which have helped to entertain your Club's membership.

We can help you only if you provide the information. Depending upon availability of space, we are also pleased to incorporate highlights of Show results (major prizewinners only, please, and DO please include first names) together with photographs if they are suitable.

And, of course, ensure that as many people as possible have advanced warning of your Meetings, Shows, and other events, by sending us details for our comprehensive 'Diary Dates' column in good time.

Send your information to: Society World Aquarist & Pondkeeper, Caston House, Wellesley Road, Ashford, Kent TN24 8ET; or you can e-mail direct to: societyw@sjpr.demon.co.uk (please let us have your information at least six weeks prior to publication).