

APRIL 1988 95p

AQUARIST

AND PONDKEEPER

FISHKEEPING AT ITS VERY BEST. ESTABLISHED 1924

**SPECIAL - IN THIS ISSUE -
COMPREHENSIVE SUPPLEMENT
ON COLDWATER AQUARIA**



FREE £2,000
LAHAINA
KAILUA
Living Reef
Aquarium System
(Series II)
COMPETITION -
part 2

ALGARDE FOR THE BEST IN AQUARIUM ACCESSORIES



BIOLOGICAL UNDER-GRAVEL FILTERS

The biological system is used by municipal authorities throughout the civilized world for the treatment of sewage and in water purification. It is a practical and proven system which works well for man and aquatic life. We are the originators of the plate type Under-Gravel Filters and our experience in design and production techniques is second to none. In use the Under-Gravel Filter plate is a means of creating a constant circulation of water down through the gravel and back up the air diffuser tube to the water surface. This constant flow of water brings all the floating particles of excreta and other debris onto the surface of the gravel where bacteria break it down into a non-toxic form. In nature the gravel beds of rivers and streams work in a similar way.

CASCADING LIFT
An aquarium aerator designed to be suspended in the gravel. Consists of an air pump and millions of tiny bubbles which rise to the water surface and create a cascading lift effect.



AIRLIFT CLEANING BRUSH
AIRLINE CLIPS & SUCTION CUPS
For use with hoses and outside of aquarium.

AIRLIFT ADAPTOR FOR DIVE PUMP
Requires standard 1/2" airline hose on ALGARDE Under-Gravel Filter to fit 1/2" DIVE Pump 1/2" suction pump. All connecting the filter to pump operation.



HEATER THERMOSTAT HOLDER
Two-piece, fully adjustable to take in lines of heaters and thermostats. Each piece with its own powerful PVC suction cup.



MADE IN ENGLAND FOR THE DISCERNING AQUARIST BY **ALGARDE**
ENTERPRISE HOUSE, CRANES CLOSE, BASILDON, ESSEX SS14 3JB
OBTAINABLE FROM AQUATIC & PET STORES EVERYWHERE



BIOFOAM 200 WITH ADDITIONAL FOAM ELEMENTS FITTED.

Biofoam FILTERS

TWICE AS POWERFUL AS ORDINARY FOAM FILTERS
The larger Biofoam 200 Filter, fitted with one foam element, as shown, is suitable for aquaria up to 24" x 12" x 15". This unit, with a turnover of 200 times an hour is also designed to form the basis of a multiple element system, which can be progressively upgraded, using adaptor kits, to increase the biological capacity to match larger aquarium sizes or density of stocking.
The smaller Biofoam 100 Filter, with a turnover of 40 times of water an hour, is for aquaria up to 50 litres (10 gallons) capacity.
Both models are suitable for all types of aquaria, including Stock tanks and Isolation and Fry Nursery tanks.

BIOLOGICAL UNDER-GRAVEL FILTERS

For all types of aquaria:— Freshwater or Marine, Tropical or Cold Water.

SIZES: 15" x 23", 11" x 12", 8 1/2" x 17", 13 1/2" x 17", 13 1/2" x 23", 7" x 14", 7" x 13", 7" x 11"

The present eight sizes of Under-Gravel Filter Plates in our range will fit the standard range of aquaria, but they can, if necessary, be extended or reduced in size, quite simply, to fit non-standard size aquaria.

Each Under-Gravel Filter is supplied complete with one airlift tube with specially designed splash deflector which not only reduces cover contamination but also helps to aerate the water. The airlift can be fitted either end of the filter plate or two airlifts may be fitted, one at either end, should the need arise. Spare airlift kits are available. A Bend and Extension Kit is also available for extending the airlift to 20" high, the bend being an alternative top fitting to the regular splash deflector.



POWER CLEANER
A powerful, efficient, highly efficient cleaning tool, of modern design with a telescopic body, which operates from an air pump. For removing slime and debris from the aquarium base and for cleaning the gravel.



AIRLINE & FITTINGS
1/2" (1/4", 3/8", 1/2", 5/8", 3/4", 7/8", 1", 1 1/4", 1 1/2", 1 3/4", 2", 2 1/4", 2 1/2", 3", 3 1/4", 3 1/2", 4", 4 1/4", 4 1/2", 5", 5 1/4", 5 1/2", 6", 6 1/4", 6 1/2", 7", 7 1/4", 7 1/2", 8", 8 1/4", 8 1/2", 9", 9 1/4", 9 1/2", 10", 10 1/4", 10 1/2", 11", 11 1/4", 11 1/2", 12", 12 1/4", 12 1/2", 13", 13 1/4", 13 1/2", 14", 14 1/4", 14 1/2", 15", 15 1/4", 15 1/2", 16", 16 1/4", 16 1/2", 17", 17 1/4", 17 1/2", 18", 18 1/4", 18 1/2", 19", 19 1/4", 19 1/2", 20")

GLASS SCRAPER AND PLANTING FORK
May be used with or without water blades. Such as safety cover for trade. Good finished stainless steel handle.



NYLON AIR CONTROL VALVES
Standard needle valve with fine thread and O-ring to prevent air leakage and for precise adjustment. Starter set consists of two valves, to which any number of single valves can be joined and locked together. Self adhesive parts supplied for easy mounting.



AIRLINE CLAMP
A fine screw thread and in complete V shape design, which reduces the area on which the clamp applies pressure, makes for accurate fitting and control. Made from exceptionally strong nylon.



TONGS
A stainless and inextensible set, work within the confines of a well stocked aquarium with ease. For use in Aquaria, Vivaria, Terraria, etc. 2 sizes 6 1/2" (16") & 7 1/2" (19")



WORM & DRY FOOD FEEDER
A clear plastic body made in the traditional round style with a PVC suction cup to anchor it to the glass of an aquarium. The food ring can be used separately as a dry food feeder.



AIRLIFT COVER
Prevents fine bubbles from being drawn into the airlift tube of Under-Gravel Filter for maximum performance.



AQUARIST

FISHKEEPING AT ITS VERY BEST, ESTABLISHED 1924

APRIL 1988

CONTENTS

Vol. 52 No. 13

3

ENOUGH IS ENOUGH . . .

Ever been driven to despair by a plague of snails? If so, then you'll know exactly how **Amanda Grimes** felt when she became a "victim" of a molluscan baby-boom.

7

THE BACKYARD BIOLOGIST

Sewage farms and Koi pools may not appear to have a great deal in common at first sight. **John Cuvelier** proves otherwise. . .

8

THE NISHIKIGOI EXPERIENCE OF A LIFETIME

Visit Koi-country in the company of B.K.S. member **Nigel Caddock** . . . and go green with envy (in the nicest possible way, of course!) in the process.

16

SPOTLIGHT

Dave Curran has probably kept more Spiny Eels than anyone else in the UK. He clearly knows what he's talking about, therefore, when he turns his attention to one of the smallest and most manageable species of the lot, the Banded Spiny Eel.

19

TOADY

Ever heard the one about the five-legged toad? Neither had **John Skillcorn**, until one of his pupils "enlightened" him.



COVER STORY

Photograph **Noreen Tan**

Supplement Cover also by **Noreen Tan**

The Red Cap is regarded as one of the most popular types of Oranda by coldwater hobbyists — novices and experts alike. Yet, really good Red Caps are hard to come by. For a start, the "red cap" itself should, ideally, be restricted to the top of the head — something that is not achieved too often. Then there is the double caudal (tail) fin which should (at least according to quite a few "authorities") be fantail in character rather than the more often seen veiltail type. Add both these characteristics to a "sprinkling" of controversy, and the Red Cap becomes, in reality, a most challenging fish indeed.

COMPETITIONS

Part II of **Lahaina's** superb £2000 Kailua Living Reef Aquarium System (Series II) — (Did you enter Part 1 last month?) 29

£500 Aquamerck Test Kit Competition winners (Sponsored by Technical Aquatic Products) 39

REGULARS

Seaview, 5 Product Round-up (Reptile and Amphibian Accessories), 13 News, 23 Letters, 26 Books, 27 News from the Societies, 31 Out and About, 35 Tomorrow's Aquarist, 37 Coldwater, 41 Questions answered, 43 Cartoons: Tanked up, 37 Fred the Piranha, 44

PUBLISHER, **John Duffley**. PUBLISHING DIRECTOR, **Tony Bennett**. EDITOR, **John Dawes**. ART EDITOR, **Paul Davies**. GROUP PRODUCTION MANAGER **Dinah Grimes**. GROUP ADVERTISEMENT MANAGER, **Neil McGuigan**. PUBLISHED BY **Buckley Press Ltd.**, 58 Fleet Street, (Entrance in Pleydell Street), London EC4Y 1JU. TELEPHONES: ADVERTISING AND PRODUCTION (01-353 4881)/ ACCOUNTS 01-583 0175. ADVERTISEMENT MANAGER, **John Young**. ADVERTISEMENT SALES (CLASSIFIED) **Hazel Payne**. SUBSCRIPTIONS £15 per annum (UK only) including postage, overseas and airmail rates on application. All subscriptions are payable in advance. Cheques or international Money order should be made payable to **Buckley Press** and sent to: **Aquarist Subscriptions, Subscriptions International Ltd.**, 92 Queensway, Bletchley, Milton Keynes MK2 2QV. Telephone: 0908 70761. Printed by **Hastings Printing Company Ltd.**

Terms and Conditions

Contributions are invited and when not accepted will be returned only if accompanied by a fully stamped and addressed envelope. Manuscripts should be typewritten. No responsibility can be taken for drawings, photographs or literary contributions during transmission or in the editor's hands. In the absence of an agreement the copyright of all contributions literary, photographic or artistic belongs to **Buckley Press Ltd.** The Publishers accept no responsibility in respect of advertisements appearing in the magazine and the opinions expressed in editorial material or otherwise do not necessarily represent the views of the Publishers. The Publishers cannot accept liability for any loss arising from the late appearance or non-publication of any advertisement. © **Buckley Press Ltd.**

20

NATIVE MARINE REVIEW

Native marines are obviously more popular than some people thought. Read **Andy Horton's** review of the masses of correspondence generated by his series.

COLDWATER AQUARIA SUPPLEMENT

S1

"SECOND LEVEL" SPECIES

John Dawes introduces some of the expanding range of "alternative" coldwater species for the coldwater aquarium.

S11

PLANTING THE COLDWATER AQUARIUM

Contrary to some people's belief, it is perfectly feasible to have a properly planted coldwater aquarium, as **Everglade's Barry James** demonstrates.

S22

FILTERED FACTS

Coldwater aquarists need to consider filtration options in a slightly different light to their "tropical" counterparts. **Tetra's Dr David Pool** examines some possibilities.

S28

GOLDFISH KEEPING — AFTER THE BASICS

What should you be thinking about, once you've mastered the basic rules of Goldfish-keeping? **Stephen Smith** has some suggestions.

THE FEDERATION OF SCOTTISH AQUARIST SOCIETIES
Members of the Confederation of Aquarists



SCOTTISH AQUARIST FESTIVAL

at
Motherwell Civic Centre, Near Glasgow
(Motherwell is 1 mile from the M74 the main motorway from the South)

Sponsored by
THE AQUARIST AND PONDKEEPER MAGAZINE

in collaboration with
THE AQUARIST AND PONDKEEPER

SAT. 14th MAY '88 Scottish Supreme Champion SUN. 15th MAY '88
10.00 a.m.-6.00 p.m. (Sponsored by Belton Fish Farm) 10.00 a.m.-6.00 p.m.

(Societies from outside the Scottish area also invited to participate and are assured of a warm welcome)

SOCIETY TABLEAUX TRADE STANDS
RESTAURANT SNACK BAR
AMPLE CAR PARKING ACCOMMODATION
ADMISSION — ADULTS £1.00 CHILDREN 30p

The classes will be judged under the auspices of F.S.A.S.

Further particulars and schedules from:
Mr. W. Bennett, 15 Coulter Avenue, Coltness, Wishaw, Lanarkshire ML2 8SZ.
(Please enclose S.A.E.)

ENOUGH IS ENOUGH

When I was a child, my mother taught me a little rhyme about snails — a happy little conversation with our shelled friends, asking how things were going with them. Every snail I came upon, I tried this out on. A total waste of time but a pleasant enough education, resulting in my enduring love of animals.

In my twenties, I thrice backed a horse called L'Escargot in the Grand National. He never let me down, getting a place every time and finally coming in first, confirming my belief that any horse called Snail could win.

Then I took up gardening — and then fishkeeping. By now I had joined various conservation organisations, putting my all into saving the whale, the oter, the peregrine falcon, the gorilla, the tiger . . . the snail? My hands are above my head, I will not resist but come quietly and plead guilty. Yes, your honour, I am a snail killer. I spend half my time keeping and raising fish; cultivating a wildlife garden; doing voluntary work for wildlife trusts. Then the lycanthropy creeps in. I froth at the mouth, my eyes take on a wild, manic stare and my mouth sets in a grim, hard line. Inside and out, I exterminate snails.

There is a way of reasoning this, but I'm not sure if it would stand close examination should, God help us, snails ever become an endangered species. In the garden, or in my aquaria, their behaviour is beyond justification. I know they have to eat — so do I — but I eat selectively, with restraint. Not so snails — they set to with abandon. I have

By
Amanda Grimes

tried to reach a compromise with them.

"Look," I say to them, "those are the plants I have set aside for you. That should give you plenty to be going on with." I say the same to the blackfly and slugs.

"And while you're working on improving your eating habits, could you see your way clear to adding a bit of family planning?"

This all seems quite rational to me. I'm not greedy and there's plenty to go round. I don't exactly get an EEC subsidy for planting two dozen lettuce in the hope of eating one, or eight bean plants with a wistful idea that I might get a handful of beans off them. And don't talk to me about slug pellets and blackfly sprays. I said a 'wildlife' garden. I have to look after my frogs and bees . . .

When I finally come in from late-night snail and slug tracking, heavy boots and salt canister in hand, I start on the tanks. Lights out and up they come, racing towards the surface — about half the gravel moving towards the waterline. Then it's sleeves rolled up and in with both hands, to grab them and haul them out.

At first it was the small, soft-shelled variety — I'm not up on snail species — but these were easily crushed against the glass and eagerly grabbed by my cichlids.

Then came the conical, pinky-brown guzzlers. They arrived, it seems, with the

bogwood and have now colonised every tank I've got. This was entirely my fault as I happily transferred cuttings of aquatic plants to other tanks, unaware that the mollusc Pilgrim Fathers were emigrating, in egg disguise, among the foliage.

I have tried dismantling the smaller tanks, removing the plant, boiling the gravel and scouring the fittings and tanks. Two weeks and they're back. I have left gravel to dry out for months on end — back they come. I have scrubbed the wood, soaked the plant in snail-killer — triumphant, they arise. I have grabbed a cross, some garlic and a stake . . .

So . . . in this year of conservation . . . having carried out a bee survey, installed a garden pond, raised about 400 frogs, read five Gerald Durrell books, sat up till dawn watching foxes, made countless lists of bee and butterfly plants for friends and family, protested yet again about porpoises, North Sea pollution and deforestation . . . I am launching my final assault on snails.

I have perused the instructions on every snail-killing preparation I can find. One by one, I shall shut down my tanks, transfer my fish and set to with a will. If need be, I shall replace every last scrap of gravel, rock, wood and plant. I shall take a magnifying glass to shops when I buy fish — just in case.

And if all else fails, I shall have a contract drawn up for the sale of my soul. After all, as my boyfriend told a good friend of ours, having declined the generous offer of some snails for our new pond: "They get so out of control, you see, and it's the Devil's own job getting rid of the, er, things".

Left, snails in disguise . . . Right, tough, beautiful and voracious, this is *Paludina vivipara*, a livebearing species of freshwater snail.



LAURENCE E. PERKINS



LAURENCE E. PERKINS

EHEIM

TAPS & COUPLINGS

The removal of your aquarium filter for cleaning or refilling is an extremely simple task when using EHEIM taps and couplings - all fitted with security hose connections.



Fig. 1



Fig. 2



Fig. 3

EHEIM
FILTER
25
YEARS

HOSE SIZE mm	SINGLE TAP PART NO. (Fig. 1)	DOUBLE TAP WITH INTEGRAL COUPLING (Fig. 2)	SEPARATE COUPLING PART No. (Fig. 3)
9	400351	400341	400352
12	400451	400441	400452
15	400551	400541	400552
19	400661		400652
25	400761		400752

Available from your local dealer, or in case of difficulty, direct from us post free.

John Allan

AQUARIUMS LIMITED

Eastern Way Industrial Estate, Bury St Edmunds, Suffolk IP32 7AB
Telephone: (0284) 765051

Australian Agent:
Aquacentre Pty. Ltd.
53 Gorema Circuit,
Kingsgrove, N.S.W. 2208

USA Agent:
Hawaiian Marine Imports Inc.
PO Box 218667,
Houston, Texas 77215

Please send free leaflets on Eheim filters & accessories

Name

Address

Telford GARDEN & LEISURE Centre

for Tropical, Marine and Coldwater Fish
Open 10 am-6 pm every day
Except Thursday and Friday
when open 10 am-7 pm



- Over 200 tanks holding 10,000 tropical fish — Large selection of rare fish — A new section of cichlids.
- New marine system filtering 3000 gallons of water an hour through our central filtration system.
- New coldwater section filtering over 5000 gallons of water every hour.
- Aquariums up to 6ft always in stock. Any size tanks made to order at short notice.
- 5000 sq ft of cold-water, tropical and marine accessories always in stock.
- Our specialised plant centre holds over 2,000 plants of at least 30 varieties.



STIRCHLEY ROAD, STIRCHLEY
TELFORD, SHROPSHIRE TF3 1EA
Tel: (0952) 595366



YOU ASKED FOR IT NOW

you've got it

PROMIN CICHLID

available from all leading
Aquatic Suppliers.

PROMIN LIMITED

BARTON STACEY, WINCHESTER, HAMPSHIRE,
TELEPHONE: 0962 760792

If you still have difficulties in obtaining your supply, see our advertisement in the classified section.

Seaview

by Gordon Kay

Three ways to go blind

If you have been keeping corallifishes for a few years, you will remember all the hoo-ha about fish blindness which was rife in the early eighties. All sorts of things were blamed for the malaise, but no worthwhile answers were forthcoming, and the whole thing died down. Or did it? From various reports I've heard, fish blindness is still with us and, in fact, my old mate Dave Garratt — who writes about the problem page in the BMAA journal 'Marine' — reckons that it is still as prevalent as ever, and we just don't realise it. There seem to be three, very different, sets of circumstances under which fish go blind.

Blindness can be caused by a bacterial infection (i.e. popeye, cloudy eyes) which is easily identified. Treat the bacterial infection in the usual way and, generally, all will be well (just look after the tank better from now on!).

Fish also go blind (along with a general deterioration), go rapidly downhill and die within about two weeks. This would appear to be due to some internal disorder for which nothing can be done and which is, of course, very difficult to diagnose. If you have a fish which hides away, won't feed and is obviously going to die, first check water quality, other inmates and any outward signs of disease. If nothing comes to light, then suspect this type of blindness and the internal illness which causes it. Death, sadly, is inevitable.

In the third kind of blindness, the fish again hides away, seems very nervous, but the chances are that it will respond to some degree at feeding time. It will be interested in food but will be unable to locate it. Simple observation will provide the key to this. The conclusions drawn from reports of this sort of blindness from people who have cured it, are that it could well be due to some dietary deficiency. A lot of hard work is involved in 'spoon feeding' a fish, but it is well worthwhile. Feeding as many different kinds of food, with liberal use of



vitamin supplements, seems to do the trick. It may also be useful to isolate the fish if possible.

I would be glad to hear from anyone who has experienced fish blindness — especially if they managed to cure it.

Variety means survival

This brings me rather neatly to my next topic — Fish Nutrition.

Like every other animal, fish must receive carbohydrates, fats and proteins — as well as certain vitamins and minerals. It is the art and science of good feeding to provide the correct diet for each species. Scientists have done much to further our knowledge in this field, but there is still a lot we don't know. It is possible that certain problems encountered in breeding and raising corallifish fry will be resolved by correct nutrition.

Most fish develop disorders of the liver when fed a diet high in fats, yet there are species which can handle — even need to have — large amounts of fat in their diet. Carbohydrates, the starches and sugars, are present in all diets and are broken down into simple sugars for absorption.

Proteins are used for maintaining body structure and must be continually replenished in the body, and this is where the amino acids come in. Many of

Sharks and their relatives have skeletons made of cartilage and are known as Elasmobranchs (see Snippet No. 3)

these amino acids are made by the fish but there are certain ones which must be provided by the diet. Different fish are capable of producing different amino acids, and it is in this field where lots of work is still needed.

Knowledge of vitamin requirements in fish is also very limited. Natural diets provide all necessary vitamins in adequate amounts, but when feeding artificial diets, it is essential that we provide sufficient vitamin content. Without research, however, we are forced to hope for the best when planning diets. Work has shown, for example, that fish suffer greatly when B vitamins are excluded. Minerals, often in minute quantities, are equally essential to survival. Again, too little is known about the minerals required for healthy fish.

If you have managed to stay awake while ploughing through that lot, one thing will have become apparent. We know so little about fish nutrition that the only way we can be sure of providing everything our fish need is to provide as varied a diet as possible.

Snippets

1. According to the findings of the Institute for Marine and Aquarium Studies in America,

a single *Oodinium* trophont could theoretically engender 4 BILLION others in less than a month. No wonder *Oodinium* is so deadly.

2. *Borophryne apogon* is a small Angler Fish (approx 3in) from the East Pacific which is a real odd-ball. The female is the one who does all the fishing and is the one with the tackle. The males are much smaller (1in) and are parasitic on the females. Immature males, however, are free swimming; they are transparent and toothless — but they DO have well developed nostrils!

3. There are two main groups of fishes named according to the type of skeletons they possess. Sharks, Skates and Rays have a skeleton of cartilage and gristle — they are known as the ELASMOBRANCHS or cartilaginous fishes. The remainder have a bony skeleton and are called TELEOSTS or bony fishes.

4. Coral reefs thwart the destructive force of the onrushing waves by channelling them into small vertically-walled canyons. These are known as Surge Channels.

5. To grow, crustaceans have to moult regularly because their hard exoskeletons don't expand with them. The exoskeleton is made of a substance called CHITIN, which is secreted by glands in the animal's skin. Moulting fluid is produced which causes the exoskeleton to separate from the epidermis (the outer layer of skin). Beneath it, much of the inner part of the exoskeleton is digested by special enzymes and is used in the production of the new one. When all is ready, the animal takes in an enormous amount of water which causes it to swell and break the old exoskeleton along the middle of the back. The animal climbs out of its old suit, continuing to take in water so as to swell and enlarge the new one to allow for further growth. When the coat has reached the required size, more enzymes are produced to harden the shell. I think stories like that are wonderful — I've always been into prawnography!

Until the next time . . .

ASHFORD AQUATICS

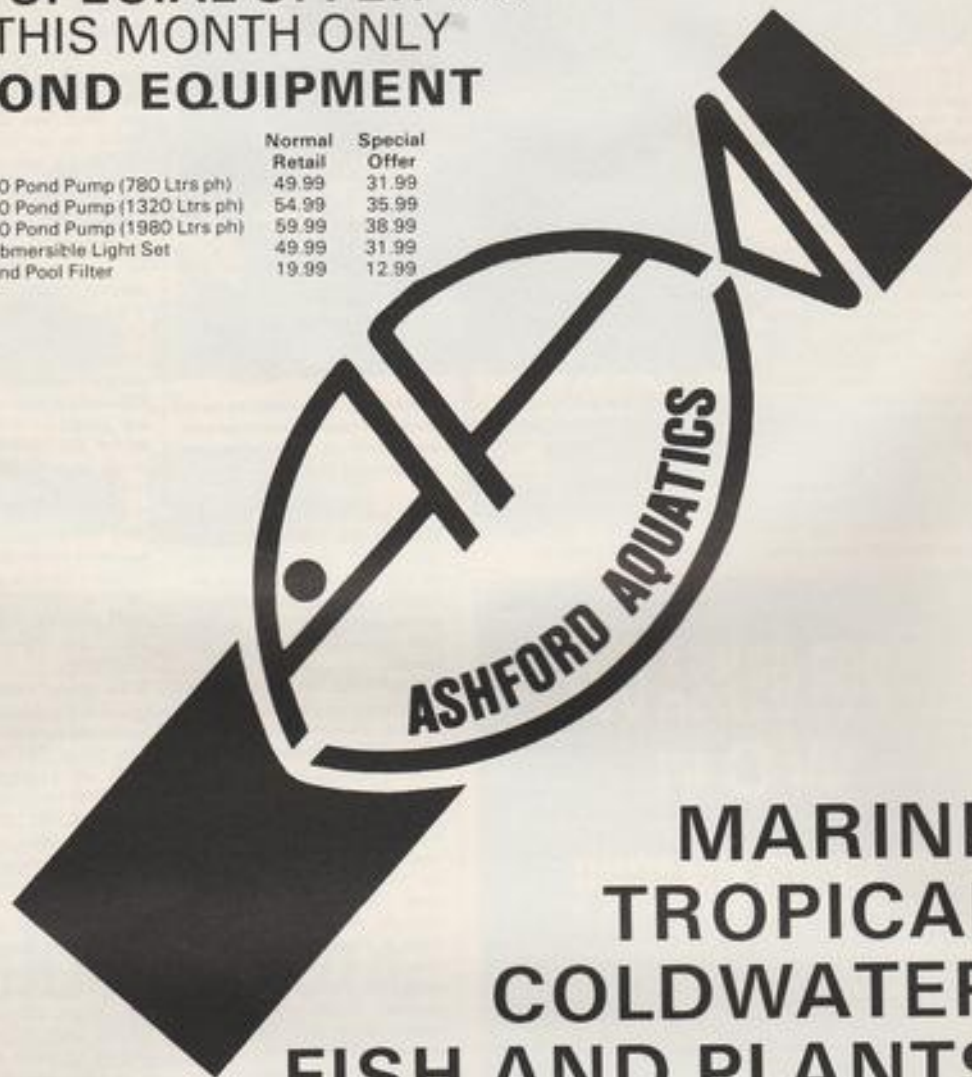
Telephone: STAINES 63830

at VERMEULENS HEATHROW GARDEN CENTRE · HORTON RD · STANWELL · MIDDLESEX

Open 7 days a week 9.30 am - 5.30 pm

★★ SPECIAL OFFER ★★ THIS MONTH ONLY POND EQUIPMENT

		Normal Retail	Special Offer
PL100	100 Pond Pump (780 Ltrs ph)	49.99	31.99
PL110	200 Pond Pump (1320 Ltrs ph)	54.99	35.99
PL120	300 Pond Pump (1980 Ltrs ph)	59.99	38.99
PL200	Submersible Light Set	49.99	31.99
PL290	Pond Pool Filter	19.99	12.99



MARINE
TROPICAL
COLDWATER
FISH AND PLANTS

ASHFORD AQUATICS

Telephone: STAINES 63830

at VERMEULENS HEATHROW GARDEN CENTRE · HORTON RD · STANWELL · MIDDLESEX

Open 7 days a week 9.30 am - 5.30 pm

THE BACKYARD BIOLOGIST!

Sewage works and Koi pool filters may not appear to have a great deal in common — but they do, as John Covelier reveals.

Ask the average Koi-keeper what he or she knows about biology and you would more than probably receive a blank look in reply. In actual fact, successful hobbyists probably know far more than they would admit to, otherwise they would not be successful. Much knowledge is gained simply in the construction and running of a good filtration system, a lot of it quite unconsciously, and you don't need to be a David Bellamy at that!

Filtration without frills

This month's offering is going to look at the basics of filtration without any frills.

What better place to start than to have a quick look at a full size sewage treatment works? The disposal of human waste is something we all like to forget about as soon as we flush it away, but there are a tremendous number of comparisons between that subject and the requirements of a garden pool filtration system!

In the full size treatment works the solids are broken down, the heavy residue being separated for disposal and the resultant fluid then being pumped via spray bars to trickle, by gravity, through filter beds and, thence, as an environmentally acceptable effluent, to pass into the nearest river. This is precisely what we aim at doing in our own small way, except that we do re-use the effluent immediately.

Those enormous circular filter beds which everyone must have seen at some time, can be a real education. Consisting, in the main, of fist-sized lumps of granite or similar material, they sit there, year after year, with minimum attention (apart from those unfortunate to live just downwind!). But, turn over a few lumps of that stone at the surface and a whole new world is revealed — a living, heaving mass of life, both visible and invisible, all living off the impurities transported by the incoming effluent.

There you have it, exactly what the Koi-keeper needs: a passive biological filter!

Fortunately, the hobbyist need not concern him/herself with anything as massive as the systems just described, but the basic principle is virtually identical, consisting, as it does, of mechanical removal of solid waste, followed by the biological removal of the remaining impurities. The simple sketch shows the principle of operation of a full size filter bed.

Backyard treatment works

The backyard 'treatment works' can either be purchased expensively, for a truly efficient and maintenance-free system, or can be custom-built by the average DIY type.

The 'Bricks & Mortar', or other methods of construction, have been covered many times before, so we shall give them a miss on this occasion apart from emphasising the necessity of good settling and mechanical removal of solid waste prior to biological treatment.

There is really only one absolute and irrefutable golden rule for any biological filter, and that is that the media used must present the water being treated with the absolute maximum surface area on which the bacteria can settle and do their work. But, at the same time, it must also offer minimum resistance to the flow through it. Now that might seem like a tall order and, in fact, if 'solid' media such as gravels are used, almost impossible to achieve.

Industry has for a number of years made use of 'man-made' media popularly known as 'Ring Media', and some of these are available for domestic use. Because of their shape, these media combine both desirable properties as they present a large surface area for bacterial colonisation, yet offer very low resistance to flow through them. One industrial type of ring media, 'FLOCOR' is readily available from the larger Koi dealers, but be warned, it is remarkably bulky, very rapidly filling the back of a large estate car. The other type of ring media, and the one which I personally swear by, is the common or garden hair roller, which, although less

bulky, presents a greater surface area and certainly looks prettier! As far as I am aware, there is only one outlet where these can be purchased in bulk, so if you're interested, give Dave Woodward a call on 021-444-5186, as he's rolling in them (sorry!).

Some people have tried nylon pot scourers which, I believe, can give good results, but unless you know of a 'trade' source, they could prove very costly and could also prove difficult to clean when the time comes. That is one major advantage of ring type media; they should rarely if ever need cleaning, provided good solids removal has taken place earlier in the filter chain.

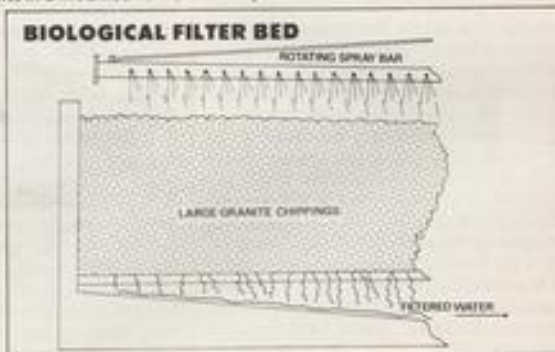
The other type of medium shown in the illustration suffers from the drawback of rapid 'blocking' when in use and believe me, it's no fun digging out half a ton of medium, washing it and then putting it back.

The vital bit, I've left until last — that of solids removal. If you don't get this right you might as well take your bat home. It is essential to prevent heavy solid waste particles from entering the biological section of a filter. Bacteria can only consume a minimal amount of solids as their primary task is that of chemical removal, so any remaining solids will quickly build up and, at best, block your filter or, at worst, poison the whole system.

A large settlement chamber fitted with brushes is probably the best method of avoiding this, these being lifted out and hosed down when they become 'mucky'. Another method is to tie a 'beer brewing' nylon bag over the end of the filter inlet pipe, although this will entail daily removal for cleaning (more often if your stocking rate is high). A couple of baffle plates to cut down turbulence in the settling area will also help.

So that's it; get about your business of becoming a backyard biologist and confound everyone with your new-found knowledge.

Left: a range of media suitable for use in a pond filter. Right: the principle of a large-scale biological filter bed, as found in sewage treatment works — but fully adaptable, in a modified form, to a Koi pool.



THE NISHIKIGOI EXPERIENCE OF A LIFETIME

Every Koi-keeper dreams of visiting the "birthplace" of our most prized coldwater fish. Nigel Caddock did precisely that last year, in the company of 16 other adventurous B.K.K.S. members.

In late October 1987, 17 fortunate members of the British Koi Keepers Society (BKKS) left the UK for a two-week journey of discovery to the home of Nishikigoi — Japan. The 1987 BKKS trip to Japan was over a year in the planning to ensure that the "tour" arrived in Japan at exactly the best time to view the best of the year's production.

Many fishkeepers in the UK buy their fish in the summer from various outlets; Koi-keepers, however, tend to regard the late autumn/early winter as the best time to buy Koi. The reason for this is that all the Japanese breeding and growing on ponds are harvested in October/November and it is only at this time of the year that high-grade stocks are available.

The trip was specifically timed to coincide with this Koi harvest. The 1987 excursion broke much new ground and was the first UK trip to visit the three major Koi producing areas of Japan — Niigata, Mihara (Hiroshima) and Isawa.

NIIGATA

Niigata Prefecture is truly the "birthplace of Koi" and, in late autumn, there is an air of expectation and excitement that assaults every sense. Every possible piece of spare ground contains a mud pond heaving with Koi waiting to be harvested. The people of Niigata are truly "Koi Kichi" (Koi Crazy). The scale of the Koi industry around the Ojiya area of Niigata is staggering; everyone is a breeder, grower or dealer.

It should be made clear that many of the people of Niigata are primarily rice farmers — Koi are a very welcome "cash crop". It is also true to say that the excitement of late autumn lasts only a few weeks, and if one was to revisit the same bustling areas in spring, many of the previously bubbling mud ponds would be drained and empty with no signs of a Koi ever being present.

However, Niigata in November is an experience that defies description, as 17 "Koi Kichi" BKKS members found out during their three-day visit to this amazing region. It is a fact that 70% of Koi produced in Japan are the three "Go-Sanke" varieties; these are Kohaku, Sanke, and Showa. Many of the varieties popular in the UK such as Ogon, Kujaku, Shusui, etc. are very much second-class citizens in the strict Japanese hierarchy of Koi.

The trip visited many of the world's finest Koi producers and the Niigata leg started with a visit to the world's No 1 Taisho Sanke producer, a man called Sakai who trades and produces under the name of MATSONSUKE. The single most important factor in the production of high-grade Koi, of any variety, is *bloodline*. The Matsunosuke Sanke bloodline is the finest in the world, and the quality of the Koi available for purchase was truly stunning. In fact it reduced one very prominent member of the party to tears, such was the impression made by this incredible collection of Koi, predominantly Sanke; ALL of the highest possible quality.

There are, of course, other premier Sanke bloodlines such as Torazo, Sadazo and Jinbei, each having special attributes. There are also many breeders producing these bloodlines, but none rival Matsunosuke, and the sight of several dozen Matsunosuke Sanke of the finest grade in one place at one time was a sight no true Koi-keeper could ever forget.

The importance of Kohaku to all Japanese Koi people cannot be overemphasised; they are a fiercely nationalistic race and the red and white of the Kohaku reminds many hobbyists of their national flag, thus giving Kohaku a special status. In the UK, if several people are asked the question, "What is your favourite variety?" there would be a wide range of opinion. This is not the case in Japan; the answer to the question in Japan would be 80% — Kohaku. For this reason there is fierce competition to produce good-quality Kohaku, as these premier fish will command the highest price. Koi production in Japan is big business, and Kohaku production is the biggest business of the lot!

The BKKS were privileged to visit Dainichi who produces the finest quality Kohaku from the world's best and most important bloodline. Such is the importance of the bloodline of Dainichi that any Koi that does not fetch the required price is killed. This may seem harsh, but protection of bloodlines is absolutely paramount to this proud and productive race of people.

Other famous Kohaku bloodlines are Manzo, Sensuke, and Torazo. A visit to one such Kohaku producer proved to be my personal highlight. In 1972, Hasegawa, a steel worker from just outside Ojiya City, spent his life savings (some £20,000) pur-

chasing three parent/breeder Koi. This decision proved to be more expensive than he could have considered, as his wife threatened to divorce him unless he returned the parent Koi and got the family's hard-earned savings back. Fortunately for Koi-keepers, the Hasegawa's managed to resolve their differences and the results of 15 years' hard work using Manzo bloodstock are now coming to fruition with stunning Kohaku with stable Hi and crispy white, with a creamy texture, denoting premier grade. Hasegawa Kohaku are now seriously challenging the very top echelons of Japanese Koi production and, still, Hasegawa is only a part-time Koi producer!

Our time in Niigata was appropriately completed by a visit to what is arguably the best Nishikigoi show in the world. The Niigata "No-gyo-sai" (Agriculture festival) is held each October in Ojiya City and is the showpiece for the Nishikigoi producers of Niigata. The depth of quality of the 3,000+ Koi exhibited is awe-inspiring. The style of show is the style originated in the UK by the Northern section of the BKKS and used for the first time at a National Show at 'KOI 87'.

The commitment to Koi in Niigata is exemplified completely by the organisation, presentation and sheer quality of Koi at No-gyo-sai which is completely unrivalled. Teams of helpers are present to undertake all manner of tasks, from the most complex to the simplest. Whatever the task, it is undertaken with enthusiasm and competence which we could only admire. The degree of commitment by some 500 people involved with the running of the Ojiya show is quite incredible.

Koi shows really begin and end in Japan. We should be inspired by the unrivalled standards set by No-gyo-sai and work hard to emulate and adapt; there is much to do before we even come close.

My visit to Niigata was one of the most enlightening experiences of my life and it served to underline graphically the thoughts I have on Koi-keeping — the more one learns, the less one knows.

MIHARA

Mihara is a fishing town located in Hiroshima Prefecture towards the west of Honshu, the main Island of Japan — others are Hokkaido in the North, Kyushu (the



Top, probably the most famous Koi pool in the world — on the roof(!) of the Sanyo Securities Building situated in central Tokyo.

Right, this magnificent 7-year-old, 32-inch female Taisho Sanke was the Grand Champion at the Ojiya No-gyosai which we visited during our stay in Niigata.

Above, a selection of superb Hasegawa Kohaku produced from the Manzo bloodline.

most southerly), and Shikoku which is located off-shore from Mihara across the Inland Sea. Many small and extremely beautiful islands dot the delightful coastline of Mihara.

Mihara is the second of the three major Koi-producing areas the trip visited, and certainly the most picturesque. Unlike Niigata, where Koi producers abound, in Mihara there are large distances between the producers, which clearly limits any visitor's schedule.

There are many famous Nishikigoi producers in Mihara and very few have been visited by UK Koi-keepers. A very popular variety in the UK is Gin Rin (shiny silver reflective scales) and Kin Rin (golden reflective scales). The first person to produce Gin Rin Koi was Ueddra in Mihara.

Shiro Utsuri is regarded as the fourth major variety in Japan and Mihara has the world's finest Utsuri producers in Sakai and Omosako. These two are responsible for the production of some of the most stunning Shiro Utsuri in the world. One was awarded a major prize at 'KOI 87' and is owned by Ian Stewardson, one of our party, who was able to meet the man responsible for producing his Koi.

Our visit to Sakai in Hiroshima was one of the highlights of the trip. The hospitality

extended to the party was the warmest possible, and the friendly family atmosphere created by one of the world's most important producers was very humbling. Sakai San (In Japan Mr, Mrs, Miss are not used — surnames are suffixed by the word 'San' which serves all people) is famous in the UK primarily for Shiro Utsuri, but a visit to his massive establishment soon makes one realise there is much more to this man than one variety. Sakai San also owns a very famous Koi featured in the Manual to Nishikigoi.

Mihara will be remembered by many on the trip for many reasons, from blind acupuncturists, to a memorable rendition of 'My Way' in a Karaoke Bar by a world-famous ex-pop star, now dealer, but the main memories will be of the amazing Sakai San, his family, his friendship and his beautiful Nishikigoi.

The return trip to Tokyo from Mihara took us to the main Goldfish-producing area of Japan, Nagayo. Travelling through Japan is a fascinating experience. The Shinkansen 'Bullet Train' is incredibly efficient and whisks across the countryside at an unbelievable 220km per hour (about 130mph), carrying passengers in absolute comfort with very little on-board movement. There is a bar, dining room and a barrage of products available for purchase. The biggest

difference, however, from UK trains is that when the Shinkansen is due in five minutes, it arrives in five minutes (literally to the second!)

ISAWA

The third major Koi-producing area in Japan is Isawa. Famous for its mild climate and hot spring water, the producers of Isawa have a constant supply of sparkling spring water at a constant 65°F (c 18.5°C). Who needs filters and water boilers?

Isawa is the home of Sakai, no relation to the Hiroshima Sakai famous for Shiro Utsuri, but brother to the Niigata Sakai who trades under the name Matsunosuke. It all gets extremely complicated but bear with me! Sakai Isawa is famous for producing the Sanke many UK hobbyists have taken to their hearts, 'Sakai Sanke', famous for their intense Hi (red).

One of the amazing sights of Isawa is to look into the drainage ditches that run parallel to many of the local roads where many Koi swim freely, many of which would grace any Koi pond. This is completely un-exciting to the local people who looked on in amazement as excited BKKS members hung out of the coach window enquiring where a net could be hired.

Z.N.A.

The 1987 trip was packed with highlights, and many members have many of their own, special, highlights. One that everyone shared was our day with the members and ponds of the Zen Nippon Arinkai (Z.N.A. — Japanese Koi Society).

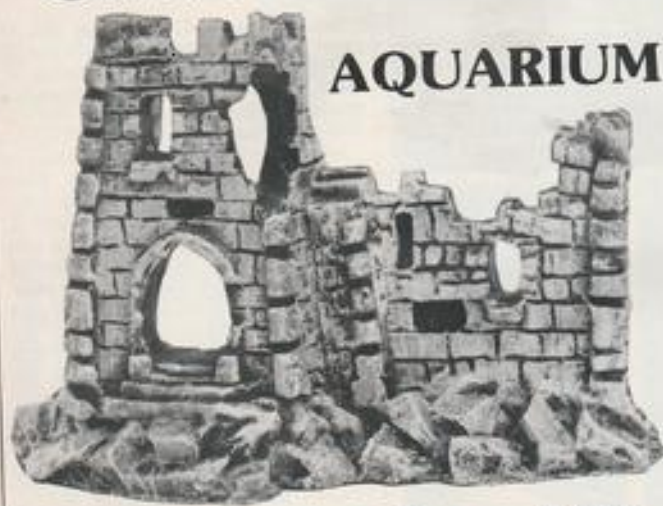
The most famous Koi pond in the world is on top of the Sanyo Securities building in the centre of Tokyo. Tschia, the chairman of Sanyo Securities, and Z.N.A. President, was our host. We were also privileged to visit the new Sanyo training centre where a new pond has recently been completed forming a centre stage to an opulent suite of gathering rooms with a unique collection of Japanese treasures, both ancient and contemporary, tastefully adorning this almost hallowed place, yet paradoxically, creating one of the most relaxing places imaginable.

BKKS members were graciously ushered to Dr Osamu Kojima whose Koi pond is incorporated into his living room via a glass door, Kozaburo Yamada who owns the world's oldest Bonsai and, finally, Ryo Kamiya's fabulous collection of Koi, and whose famous Tancho Showa delighted everyone.

Japan is a country of contrast and changing patterns of continuity. Its many mysteries and fascinations can only be glimpsed by casual visitors; its beauty, charm and diversity is a pleasure to behold and her people are friendly and courteous, yet distanced by widely contrasting cultures. Japan offers a cacophony of experiences to bewilder the senses at every turn — all this and the world's best Nishikigoi — truly the experience of the lifetime.

Note: For details of BKKS membership contact: Mrs Bobbie Barton, 316 Bourne-mouth Park Road, Southend-on-Sea, Essex SS2 5LY.

SIMLAWOOD AND SIMLASTONE



AQUARIUM DECORATION

CT 6

The latest addition to the range.
18 cms high, 25 cms wide.

Hollow backed ruined castle, useful as a filter or uplift hide.

For illustrated leaflet, please send s.a.e. (at least 9 in x 4 in) to:

Batsford Products

15 ABELES WAY, HOLLY LANE INDUSTRIAL ESTATE,
ATHERSTONE, WARWICKSHIRE CV9 2HA

POND BUILDING IN '88?

LANGLEYS

AQUATICS
(EST. 1976)

We are a main stockist for the following:

Genuine Swedish VARNAMO butyl, flat sheet (48p per sq. ft., inc. VAT) or box-welded (P.O.A.)
Manufactured to the highest specification and guaranteed for 15 years.

FOR CONCRETE PONDS: Fibromix fibres for exceptionally strong, frost resistant and impermeable rendering, using optimum high cement content to produce a waterproof membrane £6.90 for 0.9kg inc. VAT coverage 10 sq. m. per bag

G4 Pond Sealer, a moisture cured plastic sealer for new or leaking pools and waterfalls. 3 coats of G4 can be applied in one day at temperatures as low as 0°C, to produce a totally waterproof seal. No Primer required. 4 sizes (clear 5kg £35.36 inc. VAT). Also available in red, grey, green and black. Mail Order available by cheque, Access or Visa.



Tel: (0279) 76245. Open: 10am-5.30pm every day

Desborough Aquaria & Pets

Marlow Hill Parade, 31 Marlow Road,
High Wycombe
Tel: (0494) 35881

Tropical and Coldwater fish showroom
with large selection of tanks, stands,
equipment, filters and books.

(Parking spaces at front of shop)

THE water ZOO  

BOOKS

over 500 books on fish, reptiles and amphibians

4378 LINCOLN ROAD MILLFIELD PETERBOROUGH TEL 0733 312142

SUNSHINE AQUARIUM PTE LTD

681 Tampines Road, Singapore 1851 Telephone: 545 2200 Telex: RS 24564

Importers & exporters of fresh water-marine-tropical fishes and aquatic plants worldwide

ARE YOU INTERESTED IN SAVING MONEY?

THEN IMPORT DIRECT FROM US — YOU JUST CAN'T AFFORD TO IGNORE OUR OFFER

Choose from our extensive catalogue of Asian fishes and plants, all at competitive prices. With more than 25 years experience in this field, we are able to offer you the very best quality fishes and aquatic plants combined with an extremely cost effective and problem free method of transporting them to the U.K. Discounts available for volume orders.

Our transporting costs are as follows:

FRESHWATER AND AQUATIC PLANTS	DESTINATION		
	LONDON	MANCHESTER	GLASGOW
1 to 10 boxes	£18.00/BOX	£19.00/BOX	£20.00/BOX
11 to 25 boxes	£16.00/BOX	£17.00/BOX	£18.00/BOX
26 and above	£15.00/BOX	£16.00/BOX	£17.00/BOX
Marine Fish	£28.00/BOX	£30.00/BOX	£32.00/BOX

The above charges are only for 4 bags in a box. For 6 bags in a box add £1.00.

To obtain a price list or for further information please contact:

SAMANTHA BARBER — ASG (UK) LTD. TEL: 01-897 7181

AWARD-WINNING POND TREATMENTS AND ACCESSORIES FROM THE No.1 NAME IN FISH-CARE

Setting up and maintaining a pond can be a headache, but with Interpet's range of books, treatments, pumps and accessories 35 years of experience is on-hand to help.

Interpet Pond Water Treatments offer the simple, safe, and sure way to achieve a pond to be proud of.

SIMPLE because we've taken the guess work out of measuring with our easy-dose bottles.

SAFE because we've carefully formulated each treatment to the exacting safety standards you'd expect from the No. 1 name in fish-care.

SURE because Interpet's Pond Water Treatments give effective results.

The Pond Water Treatment-Range

FRESH START — conditions tap water and removes chlorine

GREEN AWAY — clears green and cloudy water

PURE POND — acts as a general disinfectant and tonic

ANTI PARASITE — attacks most common parasites

ANTI FUNGUS AND BACTERIA — attacks most fungal and bacterial disease causing organisms



Available from aquatic pet shops, garden centres and hardware stores.

For a more detailed guide to Interpet's fish-care products send for a FREE Product Information Guide.



Interpet Ltd., Vincent Lane, Dorking, Surrey RH4 3YX



Triple action Ultimate tropical fish food. It'll take a long time to beat.

It took 5 years of single-minded scientific expertise to develop such a powerful combination – the triple action of Ultimate.

Long term health, derived from brewers yeast, giving the benefit of the entire vitamin B range, Amino Acids and essential micro-nutrients.

Proteins from 8 different sources to support growth plus our specially developed 'Apatone', appetite stimulant and attractant.

Natural resistance to disease is increased by the inclusion of a wide spectrum of multivitamins.

Green, red and beige flakes, each a more finely balanced, more controlled nutrient package than ever before.

It'll take a long time to beat – but we're working on it.

Phillips Yeast Products Ltd.
Park Royal Road, London NW10 7JX.

TRIPLE ACTION...TRIPLE ACTION...TRIPLE ACTION...TRIPLE ACTION...TRIPLE ACTION...

PRODUCT ROUND-UP

By Dick Mills

THE HERPTILE SCENE

If the idea of switching from aquatics to herpetology is not too heretical a consideration for you, then read on. An immediate thought might be to make use of any redundant aquarium as living quarters, especially for amphibious species; but this idea is not nearly so practicable, especially so in the case of snakes, lizards or more terrestrial animals. Two immediate drawbacks with an all-glass container are condensation problems and heat losses. A custom-built vivarium is by far a better solution. Generally of wood construction with a sliding glass side for viewing, maintenance and access allows for better heat retention and for less condensation.

Vital requirements for amphibians and reptiles are ventilation, a temperature-controlled environment and correct lighting. Add to these, adequate hygiene, special live foods and vitamin supplements, and your charges should thrive.

For tropical species heating is mandatory but, in addition to warming the whole atmosphere, various animals also require additional zones of differing temperature. Everyone appreciates the need of spotlights, say, to provide extra-warm basking areas, but what is not always realised is the necessary provision too of cooler areas where the animal can escape from the permanent 'sunshine'. The type of lighting can also be critical: lizards and tortoises require sunlight-approximating light for calcium conversion, for instance. So what's available in the 'life-support' line?

HEATING

If 'space heating' is not to be employed, then some form of localised heating must be used. Background heat may be needed for small vivariums, but larger installations will require more powerful systems.

INTERNAL CERAMIC HEATERS (conical or bar types) are one answer, but these must be used with a covering guard to prevent animals from

burning themselves. It is very important to use the correct ceramic holders in conjunction with these types of heaters. A brand-new range, **Paradise**, is exclusively being distributed in the UK by **XOTIC PETS LTD, Unit D2, Salcombe Road, Meadow Lane Industrial Estate, Alfreton, Derbyshire DE5 7RG. (Tel: 0773 83831)** who will be pleased to supply full details.

HEATING PADS are wide-



This is a "ceramic" heating element suitable for vivaria.

ly used but, although 'splash-proof', they are not submersible; they can be used either within the vivarium itself (on walls or ceiling) or externally, underneath it. The **ULTRA THERM 10** range of heater pads is available in 24, 30, 36 and 48in sizes. Details from **AQUANOVA, 16 Victoria Road, Kirkcaldy, Fife, Scotland (Tel: 0592 204997)**.

SUB-SOIL HEATING CABLES are popular with herpetile-keepers too, although their use depends on the type of animal to be kept. **RENA-CORE** heating cable has the advantage that a thermostat is not always necessary. Details from **IMPELEC Ltd, The Bury Farm, Pednor Road, Chesham, Bucks (Tel: 0494 786759)**.

With whatever type of heating used, a reliable thermostat must be used. Not all external aquarium types are suitable but **UNO's NOVA** solid-state thermostat with remote heat sensor should meet most requirements. Details from **UNO Aquatic Products, Uno House, Arnold Street, Nantwich, Cheshire CW5 5RB (Tel: 0270 623674)**.

Like aquarium-heating equipment, that for the vivarium must be selected carefully. An over-large heater will cause severe problems in the event of thermostat 'stick-on'. Similarly, a heater of a size chosen to

cope with winter ambient temperatures will efficiently over-heat the vivarium in summer. Choose a heater which just fits the job in hand.

LIGHTING

To make the best use of light, especially where the necessary UV has to reach the animal, lights must be fixed inside the container beneath the cover-glass or lid.

UV-emitting tubes (like normal fluorescent tubes) do not emit very much heat, and so, a separate 'ordinary' spotlight will be necessary to provide 'basking spot' heat. Infra-red rays are equally important to the animals and these can be provided from the ceramic emitter acting as an overhead heater.

UV sunlight bulbs are ideal for lighting and heating animals such as desert species where temperatures vary from day to night-time. Where more constant-heat loving species are concerned, a heating pad must be used to continue the 'day-time' temperatures overnight.

TRUELITE UV tubes provide light approximating very closely natural daylight, but as the UV output is relatively low, animals need to be able to get really close to these tubes to benefit from them.

ACTINIC UV tubes (use 09 type and not those used in marine aquariums) emit less light and have to be used in conjunction with white spotlight bulbs during daylight.

VIVARIUMS

There is not an exactly flourishing supply in 'off-the-shelf' vivariums to the same extent as aquariums, but many retailers have developed their own individual designs which are available to customers.

Having said that an aquarium cannot be converted into a home for 'herps', there is at least one instance where this has been done successfully. The name **MINIREEF** is well-established as a complete marine aquarium system and now, one of the range, the

popular **H39** model aquarium, has been converted into a vivarium. It offers not only the basic requirements of ventilation and heating (owners fit the necessary lights depending on animal to be kept) but, like the marine aquarium, look visually stunning — black, white or choice of veneers — with sliding covers within the matching hood. A multiple unit, based around the same format, is available to the trade for commercial display uses. For further information contact **MINIREEF AQUARIUM SYSTEMS, Salcombe Road, Meadow Lane Industrial Estate, Alfreton, Derbyshire DE5 7RG (Tel: 0773 831831)**.

SEABRAY have also diverted some effort to the production of vivariums. Manufactured to the same high standards as their aquariums, vivariums are available in 18, 24,



Several manufacturers, such as Seabray, offer a good range of quality vivaria at prices to suit most pockets.

30, 36 and 48in lengths, all with 12in front to back dimensions. Further information and a full-colour brochure of Seabray products from **SEABRAY, Unit 1a/1 Tunnel Estate, 726 London Road, West Thurrock, Grays, Essex RM16 1LS (Tel: 0708 864425)**.

CLEAR-SEAL, manufacturers of aquariums have also turned to producing a range of vivariums which are both func-

Tropical Marine Centre

Tropical Marine Centre Ltd., Imperial Studios,
Maxwell Road, Borehamwood, Herts.
Tel: 01-207 1234. Telex: 8952814 MARINE G.

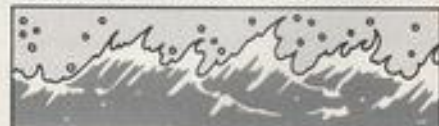
STRICTLY WHOLESALE ONLY

Specialist suppliers of quality marine fish and invertebrates to the aquatic trade offering variety from twenty three sources of supply, covering every tropical ocean in the world.

The strength and quality of supply enables us to be increasingly competitive — being the best does not mean the most expensive.

In addition to our extensive range of aquarium and professional ultra violet sterilisers, we are pleased to introduce our range of TMC U.V. Pond Clear units available for the 1988 pond season.

Tropical Marine Centre Ltd



TROPICALS & WATER GARDEN CENTRE

143 QUEEN STREET, NEWTON ABBOT,
SOUTH DEVON. TELEPHONE: 60588

NEW WATER GARDEN NOW OPEN

An unbelievable selection of fish, plants, fibre glass pools, liners, pumps, lighting, foods, remedies etc, etc.

Come and be very pleasantly surprised

OPEN SEVEN DAYS A WEEK — LATE NIGHT FRIDAY

EVERGLADES AQUATIC NURSERIES

DEPT. AP, BAUNTON, Nr. CIRENCESTER, GLOS

Telephone: Cirencester 4656

Prop. BARRY JAMES

Well known suppliers of good quality Tropical Plants throughout Britain by Mail Order. However, visitors are welcome to our nurseries where in addition we have a full range of equipment, dry goods and aquascaping materials plus a good variety of Tropical & Coldwater Fish. Send for our new price list 50p. Also Duplicate catalogue 75p.

TROPICAL PLANT COLLECTIONS

p&p £1.25 ALLOW 14 DAYS FOR DELIVERY

Collection for a 24in Aquarium Contains 32 assorted plants £8.10	Collection for a 48in Aquarium Contains 71 assorted plants £16.75
Collection for a 30in Aquarium Contains 44 assorted plants £8.35	Cryptocoryne Collections 10 Mixed Cryptocorynes £3.70 25 Mixed Cryptocorynes £9.25 50 Mixed Cryptocorynes £18.55
Collection for a 36in Aquarium Contains 56 assorted plants £10.55	Balls Collection 10 Mixed Nymphs and Asian Apogonids £2.70
Fish House Collection As for 48in plus a number of other plants for multiple tank installations £23.75	Floating Plant Collection 4 species all different £1.50
	Discus Collection for 48in 40 Suitable Plants £17.75

Great News for Aquatic Plant enthusiasts
AT LAST . . .

A BRITISH SUBSTRATE AND FERTILIZER SYSTEM FOR LUXURIANT PLANT GROWTH

EVERITE No 1
New rich substrate additive in powder form for new Aquaria. Contains both basic and trace element fertilizers and root growth hormones. Price £5.50 per 100gms. Pack to treat aquaria up to 200 litres. 501 pellets.

EVERITE No 2
New rich substrate additive in pellet form for adding to existing aquaria. Price £5.50 per 100 grams to treat aquaria up to 100 litres (172 pellets).

EVERPLANT 'D'
Liquid fertilizer for aquatic plants. Contains vital trace elements added on a daily basis. Price £2.45 for 100mls to treat 27,000 litres (1000 gallons).

EVERPLANT 'M'
A fertilizer in tablet form ensuring a healthy feeding regime for all aquatic plants containing both basic and other vital nutrients. Price £2.45 per 50 tablet pack to treat 1000 litres (200 gallons).

Please add £1.50 for p&p

Opening times: Tuesday-Sunday 10.00am-1.00pm, 2.00pm-5pm

Closed all day Monday except Bank Holidays

"A FISHKEEPER'S GUIDE TO AQUARIUM PLANTS" by Barry James
Price £5.45 p&p included — Buy from us, autographed FREE

PRODUCT ROUND-UP

tional and attractive. **CLEAR-SEAL**, 38-40 Cherry Wood Road, Bordesley Green Road, Birmingham B9 4UD (Tel: 021-771 0266).

CRITTER-COVERS is an aptly descriptive name for vivarium covers from **HAGEN**. Although these are made in a relatively small range (to fit 20in x 10in and 24in x 12in standard sizes) they can obviously be fitted to deeper-than-normal glass containers according to the size of animals to be kept. On a smaller scale (show tank size, for example), containers suitable for such species as spiders, stick insects and terrapins are also available with hoods to match the Critter Covers themselves. Details from **ROLF C. HAGEN (UK) Ltd**, 275 Kirkstall Road, Leeds, West Yorkshire LS4 2BZ (Tel: 0532 796566).

JORDANS TERRARIUMS/VIVARIUMS are custom-made from glass with brass edgings on all bonded joints. Made on a design similar to the miniature jardiniere, these hexagonal, octagonal or simply rectangular vivariums provide

light, airy quarters for reptiles in highly-decorative styling much removed from 'pet-shop' type accommodation. Prices reflect the workmanship, being in the £125-£295 range. At a lower scale of prices, locally-designed and produced vivariums are also available in a wide range of sizes (24in x 9in x 15in, 30in x 12in x 15in, 36in x 12in x 15in, 48in x 12in x 15in and a massive 30in x 36in (high) x 12in) from **JUNGLE ZOOLOGICAL SUPPLIES**, Fordbridge Road, Sunbury-on-Thames, Middlesex TW16 6AX (Tel: 0932 766180).

A slight deviation from the vivarium is the paludarium. This can also be described as a fully-enclosed 'aquascope' (for those aquarists familiar with such a term), or an aqua-terrarium. It contains both terrestrial and aquatic life — above and below the water — and many hobbyists will be aware of the popularity of these on the continent, particularly in Germany and Holland (remember Bill Tomey's brilliantly-coloured Tree-Frogs?). Here again, condensation can be a problem, as

any gap left open immediately provides an irresistible escape route for the animals! Most are made to order to fit that spare alcove's dimensions.

FOODS

Despite the growing number of sources providing live foods for herptiles, like aquarium fishes, the secret is to provide a good varied diet — even a reptile will tire of a ceaseless round of even the fattest crickets. In addition to locusts, waxworms, etc. which are readily available, it is most important to supply vitamin supplements. Here again, your knowledgeable dealer will be able to advise. Speaking of which, the above Product Round-up would not have been possible without the generous assistance from a number of contacts who suddenly found themselves, either physically or telephonically confronted, and presented with my deadline! Thanks are especially due to Robert Baltrock of **THE VIVARIUM**, 55 Boundary Road, Walthamstow, London E17 (Tel: 01-520 2072), Mark Hewick of **THE**

Almost before the water in our ponds has had time to warm up (or turn green), manufacturers are already turning their attention to outdoor fishkeeping.

ROLF C. HAGEN

An integrated system of pond pumps, filter and lighting (which also combines safety with versatility) was released in March by **ROLF C. HAGEN (UK) LTD** exclusively to the independent pet and garden trade. The **LAGUNA** system (developed by experts associated with such familiar names as Fluval and Aqua Clear) can be made up from differing combinations of components to suit your own pond's needs. Heart of the system is, of course, the pump. Here, three models are available:

Models 100 (780 litres), **200** (1320 litres) and **300** (1980 litres). A 'lift' of up to 2 metres (for waterfalls) is provided by the pressure thrust exhaust while the output pressure creates spectacular fountain displays. Each pump comes with its own transformer (for safe 24v operation) and all the necessary connectors, cables, strainer cartridge, fountain piping, nozzle and diversion valve.

NEW PRODUCTS

Optional accessories include five spray nozzles with extension coupling for varied fountain effects, fountain extension stems for deeper pools, spare transformers, bulk cable run and cable connectors, pump motors and impeller assemblies. Pump prices are £49.99, £54.99 and £59.99 (for the Models 100, 200 and 300 respectively).

The **Underwater Lighting Set** (£49.99) is also transformer-powered and has a weighted base to keep it in position; it can be mounted on the same base as any of the three pumps if desired. Optional accessories include a boxed set of four differently colour-

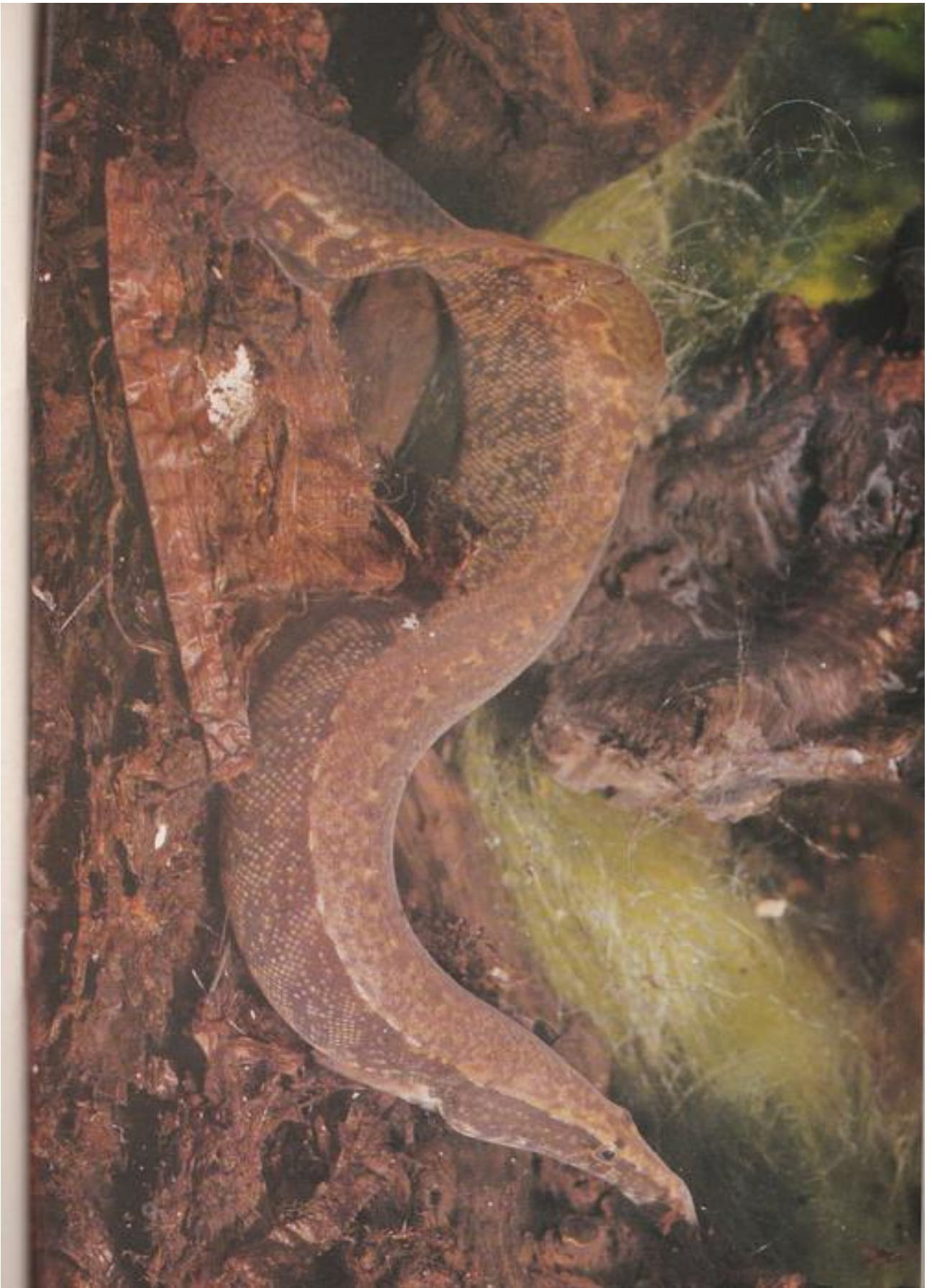
ed 'clip-on' lenses and blister-packed replacement bulbs.

The **High Efficiency Filter** (£19.99) comes with a run of extension hose for poolside location, hose connectors and a foam filter insert. Lifting the filter out of the pool is no hardship as the filter has a handle on top for this very purpose. 20 metre hose lengths (in 12mm and 19mm diameters), foam insert and foam pad replacements make for versatile use and 'easy-clean' maintenance. Details from **ROLF C. HAGEN (UK) LTD**, 275 Kirkstall Road, Leeds, West Yorkshire LS4 2BZ (Tel: 0532 796566).

Hagen's wide-ranging and versatile Laguna system.



ROLF C. HAGEN



Spotlight

THE BANDED SPINY EEL

As Dave Curran reports, the Banded Spiny Eel has a new scientific name, but it's still the same fish — one of the smaller and more manageable members of an extraordinary family. Photograph: Arend van den Nieuwenhuizen.

The Banded Spiny Eel hails from the fresh waters of south-eastern and peninsular Thailand, and parts of northern Malaysia. This, like other species of Mastacembelids, can burrow into the substrate if it feels that way inclined, but it is as much at home beneath roots, in crevices, or among plants, and, in the wild, *M. circumcinctus* can be found in lakes and waterways on fairly low ground.

M. circumcinctus is one of the smaller, more manageable, of the spiny eels, and only grows to a length of 25cm (10in). It is fairly common within the hobby, but, apparently, most aquarists and retailers do not know what it is when confronted with it. It is sometimes as commonly available as the Peacock Spiny Eel — *M. siamensis* — or Tyre-Track Eel — *Mastacembela armata* — and is usually sold at between 8-13cm (about 3-5in).

I have found this to be one of the most peaceful of the Mastacembelids, and an ideal candidate for the community tank, although care should be taken so as not to introduce it into a tank containing fishes which are obviously far too small, i.e. fry. Likewise, it should not be kept with boisterous fishes which may intimidate it too much. Fortunately, *M. circumcinctus* is quite adept at finding hiding places, and if no such places can be found, it will then burrow into the substrate to avoid being pursued.

Caves or other suitable hiding places should be provided for these fish. They will be seen quite regularly, especially if live food is dropped onto the bottom of the aquarium. And they will rarely burrow, unless frightened.

I have found that, contrary to some reports, *M. circumcinctus*, like some other spiny eels, tends to respond to the presence of others of its own kind. If other *M. circumcinctus* are not available, it will sometimes be contented with other species of *Macrogonathus* or *Mastacembela* if kept together.

Description

M. circumcinctus was first described by Sunder Lal Hora in 1924 under the generic name of *Mastacembela*, and it remained

thus until 1984 when Dr Robert Travers reviewed the suborder Mastacembeloidei. In this review he placed eight *Mastacembela* species into *Macrogonathus* based on a number of anatomical similarities. This made the total number up to eleven species.

This fish, although not brightly coloured, is nevertheless quite attractively marked. The back and sides of the fish are brown (sometimes fading to a brass-like colour on the underside) with darker brown markings. One of these markings is a dark stripe across the interorbital (the top of the head between the eyes) and the other markings form diagonal bands, wider at the top of the body and narrowing ventrally. These bands slant downwards and forwards then straight down, some bands tending to start pointing to the rear, sometimes splitting into two. In between the bands traversing the belly are short, narrow lines, which do not go up onto the body.

In 1935 a species was described by Henry Weed Fowler, which although resembling *M. circumcinctus*, had differences, these being that the markings on the body did not reach the border of the anal fin, whereas they did in *M. circumcinctus*. This new species was called *Mastacembela tamisigaster*; we now know this to be a synonym as was first put forward by de Beaufort in 1939 and confirmed by S. M. K. Sufi in 1956.

Coloration in *M. circumcinctus* can vary to a certain degree in individual specimens. Depending upon the mood and condition of the fish, the normal coloration can give way to a two-tone effect, with the lower part of the body being almost normal but faded, and the area above the lateral line being an almost plain light brown colour. This change, sometimes in a very short period of time, sometimes leads people into thinking that there is another fish in the tank — the difference can be so striking. A friend suggested to me that this seemed like a form of camouflage, as its outline was observed to be broken up when laid in front of some rocks. In the light of these observations I have concluded that this could very well be so.

Quite small specimens, when disturbed, will dart about the tank like agitated Coolie (Kuhli) Loaches, and if this happens while the covers are removed (while feeding or

during water changes, etc), then the fish could quite easily leap out of the tank and end up on the floor. For this reason it is advisable to keep a close watch on them under these circumstances.

Spawning

The only account of the spawning of *M. circumcinctus* of which I am aware, is by S. M. Kochetov, and was published in the *Tropical Fish Hobbyist* magazine, together with an account of spawning *M. siamensis*.

Spawning took place in a 130 x 50 x 50cm (52 x 20 x 20in) aquarium with water of pH 7-7.4, DGH 8°, and temperature 77 to 83°F (26-28.5°C). No substrate was used, but an egg net was laid across the bottom of the tank and a piece of ceramic pipe included for shelter. Dim lighting was used (15W bulb), and a 500-litre-per-hour pump used for circulation and movement.

A pair was introduced to the tank and, about a day and a half later, courtship chases began. The fish visited the pipe, but later both were noted pressing each other against the sides. Both fish then dived beneath the net and spawned there. It was suggested that because of this phenomenon, *M. circumcinctus* was a substrate spawner.

Apparently no more than 400 eggs were produced at each spawning (as opposed to up to 2,000 eggs for *M. siamensis*), which hatch in six days at 77-83°F (26-28.5°C). The fry are free-swimming after only a few hours. Small food was taken after a few more hours.

The fry were regarded as being more delicate than those of *M. siamensis*, and growth was not as fast — 2-3cm (¾-1½in) at one month.

Ichthyologists are somewhat sceptical of the results of this experiment, as gonadotropic hormones were used to induce spawning. This is thought to have led to unnatural behaviour on behalf of the fish.

Kochetov refers to the fish as "*Mastacembela* species (usually called *M. circumcinctus*)". I have no idea as to what he thought this fish might be, but the photographs clearly show them to be *M. circumcinctus*.

As must be advised with all Mastacembelids, *M. circumcinctus* must be kept in a well-covered aquarium, as they will inevitably try to escape if the chance arises.

The water conditions given by Kochetov are quite acceptable, but extremes should be avoided if your aquarium is different.

References:

- de Beaufort, L. F. 1939. "On a collection of freshwater fishes of the Island of Borneo." *Tropica Boreologica*, 17, p. 195.
- Fowler, H. W. 1935. *Proc. Acad. Nat. Sci. Philadelphia*, 87, p. 136.
- Hora, S. L. 1924. "Zoological results of a tour in the Far East. Fish of the Tai Sap, peninsular Siam (Part 1)." *Mém. Asiat. Soc. Bangkok*, 6, p. 675.
- Kochetov, S. M. 1982. "Spawning Spiny Eels", *Tropical Fish Hobbyist*, 30 (January) (3) pp. 8-13.
- Editor's Note: For other references to spiny eels, read "Spiny Eels and their relatives", *A & P* June, 1986, pp. 62-65, and "Spiny Eels — a guide to their care", *A & P* June, 1987, pp. 24-25 — both written by Dave Curran.

Two top quality air pumps for the professional

NA.1

Operation up to 150 24x12x12 tanks
Speed 2,800 r.p.m.
Capacity 29.4 cu.f.m.
Max. Pressure 1.5 p.s.i.
Consumption: Watts 150, 240V

NA.2

Operation min. 250 24x12x12 tanks
Speed 2,800 r.p.m.
Capacity 53 cu.f.m.
Max. pressure 1.2 p.s.i.
Consumption: Watts 370, 240V

*And here's
why...*

- ★ Low noise level
- ★ No moving belts
- ★ Low maintenance
- ★ Trouble free low cost running
- ★ High performance at competitive prices
- ★ Versatile system connects to minimum 1in. pipe

Trade-only from:

Norwood Aquarium Ltd

631 Limpsfield Road, Warmingham, Surrey CR3 9DY. Tel: (08832) 5454



Dimensions: 233 x 233 x 235 mm. Weight: 7.5 kg.



JOHN SKILLCORN

Toady, as can be seen, is in the best of health, despite his extra leg (visible pointing backwards from the "elbow" of his right forelimb).

TOADY

John Skillcorn reports on the discovery of a Common Toad with a difference, and a most unusual one at that.

Living your life as I do, teaching Biology in large, comprehensive schools in the north of England, you never quite get accustomed to the strange things that the pupils occasionally bring you to marvel at.

I well remember, for instance, the piece of swollen, pickled appendix (Yuk!) that one pupil brought me after his appendectomy, insisting that he show the rest of the class his operation scar. Then there was the girl who brooked no refusal that I should admire her Auntie Mary's latest abstracted gall stone (double Yuk!) — I thought it was a blackbird's egg until I picked it up (could that really have fitted into her gall bladder?). I'm sure that you will agree that these would take some beating for originality, but beaten they were, and only just recently, after 14 years in the profession.

A particularly bothersome third year, obviously thinking that he could get round me and perhaps make me forget about the punishment which was inevitable and



JOHN SKILLCORN

As this X-ray shows, the extra limb is completely formed, but is smaller than its "normal" counterpart.

toad with five legs. Well, as much as I wanted to tell him that, yes, I actually had seen millions of toads, each one of which would have put a particularly leggy centipede to shame(!), I don't tell fibs, and so I had to admit the truth. He clearly had seen such an animal, and so was one up on me, and, to boot, promised to bring it in to prove his claim next lesson. His ruse had worked, the end-of-lesson buzzer went, and he scurried before I could administer the (figurative!) deadly blow. I promptly forgot about him and the toad. Imagine my surprise when, next lesson (in spite of all I tell them about touching our amphibians), he turned up with a small container, the contents of which seemed to be making plaintive, peeping noises.

The toad is an adult male British Toad, *Bufo bufo*, several years old, and has four normal, full-sized limbs. However, the right forelimb is quite fully double, complete with digits, and is held at an angle towards the rear of the body. The bone structure, as shown by X-ray, is complete, and the separation of the two limbs occurs at the 'elbow', the two humerus bones until then running parallel. There are only the normal two scapulae; the right, however, has two sockets, each one locating the heads of the twin humeri. The presence of the extra limb has not encumbered the animal, which has survived in the wild for a number of years, the exact number of which must remain uncertain. It is feeding quite happily on waxmoth larvae, crickets, mealworms and earthworms.

The toad was found by David Hepburn, who, in spite of what I said in paragraph three, is really quite a pleasant guy, and only needs the occasional poke in the eye to keep him on the straight and narrow! David is a third year pupil attending Sandhill View School in the Sunderland Education Authority of Tyne and Wear, and discovered the animal in one of two large lakes known locally as Gilly Law Lakes in the Farringdon area of Sunderland. In fact, David used to live very close to the lakes, which are used for recreation purposes by the local residents. Coarse fish are found in the larger of the two lakes, along with Common Frogs, *Rana temporaria*, and Smooth Newts, *Triturus vulgaris*. David informed me that the waters are used for spawning purposes by all of the three mentioned species of amphibian, and on the day of discovery, masses of toad and frog spawn were in evidence.

I can only guess at the cause of the extra limb, but I strongly suspect that the toad, as a tadpole at the point of front limb bud germination, was attacked and damaged, the right bud perhaps being split completely into two. As regeneration in amphibia is well-documented, each portion of damaged limb bud may, perhaps, have developed into a complete front limb, hence the present example — a toad which can count up to twenty-two! Some of my pupils, on the other hand, can only count up to twenty!

Thanks are due to Radiologist Mrs Fiona Cox and Messrs Clark and Scott MRCVS, veterinary surgeons of Low Fell, Gateshead, for their kind assistance.

NATIVE MARINERS

Andy Horton's excellent native marine articles have resulted in a huge mailbag over the past year. Here is a selection of "edited highlights".

Keepon writing! In one year I have received loads of interesting letters, with some 15 thousand words — often full of intricate detail, much of it not written down in books or magazines anywhere in the world. Every seashore enthusiast and aquarist can contribute to the pool of knowledge of the marine environment.

REFRIGERATION

Certain themes are dominant. Keeping the water cool is one. At the time of writing, no commercial firm produces a 'cooling unit' easily available, and at a price affordable by aquarists. Therefore several innovative aquarists have developed their own methods for reducing the temperature. The favourite is the 'beer cooler'. Phil Hills, from Worthing, Sussex, has a typical set-up. The secondhand 'beer cooler' is located under the tank, and the water is continually pumped in a cycle from the tank, through the cooler, and back into the tank again. Similar results can be obtained using an old refrigerator.

TIDAL TANKS

Jeff Rush, from Lisburn, County Antrim, has developed a tidal system in his

specially designed 6-foot tank. Twice a day the tide is pumped out into two reservoirs. Blennies like to bask on rocks out of the water, crabs scurry over exposed rocks, until, at a time automatically fixed, the water is pumped back into the tank through a spraybar. Beadlet Anemones retract into featureless blobs of jelly when exposed. As the tide returns, and the anemones again become submerged, tentacles extend in an active search for small prey.

Tony Taylor, from Winsford, Cheshire, installs tanks to mimic the conditions found in natural rock pools.

QUESTIONNAIRE: EQUIPMENT

21 aquarists replied to my Questionnaire in the May 1987 issue of *A & P*. (A similar Questionnaire appeared in the Winter 1986-87 issue of the journal of the Marine Conservation Society).

The most popular tank sizes among native marine aquarists are 36in x 15in x 12in and 48in x 15in x 12in in equal proportions. The predatory nature of British marine life means that many enthusiasts keep more than one tank. Also, larger tanks, 6-foot plus, and over 100 gallons, are kept by a few aquarists.



Left, nearly all native aquarists keep Hermit Crabs. In Sea Hare (*Aplysia punctata*) feed on Sea Lettuce (*Ulva*).

Undergravel filtration (80%) is by far the most popular method. Powerheads are used frequently (50%), and both internal and external power filters are used in conjunction with the undergravel system. Two aquarists used a home-made external filter system. A further two aquarists used a commercial external power filter.

I would surmise that cost was a major factor in the choice of the filtration system. Undergravel systems are cheaper to install and run. They provide satisfactory filtration, but the tank tends to get a bit mucky. Powerheads have greatly improved their efficiency.

QUESTIONNAIRE: SPECIES

I have received letters from all corners of Great Britain, in equal numbers from all parts of the country. Some aquarists will travel 100 miles, or more, to their favourite coast.

A few newcomers experienced difficulties of identification. Gobies are only rarely differentiated. All aquarists can instantly tell a Blenny from a Goby, and a Snakelocks Anemone from a green Beadlet Anemone.

TOP TEN SPECIES

1) Hermit Crab *Pagurus bernhardus* ... 90%
Virtually all native marine aquarists keep this amusing and interesting invertebrate. It is abundant on a variety of shores, which is an important reason for its popularity. It will feed readily on mussel. Typical lifespan is only 6 to 7 months.

2) Beadlet Anemone *Actinia equina* ... 80%
Almost indestructible in marine aquaria, the Beadlet is an ideal and colourful anemone. It is commonly found on rocky shores, and on groynes in some sand and shingle areas.

After hosing the beach rocks down with freshwater, they still had tufts of Sea Lettuce, *Ulva lactuca*, attached. This was the only form of seaweed on the rocks as far as I could see. But when I looked into the tank a week later, I was surprised to see two forms of red weed: *Plumaria elegans*, and *Dulse*, *Palmaria palmata*, and some green and brown weeds including *Bryopsis plumosa*, and *Cladophora rupestris*.

Phil Hills, Worthing.

As for the Topknot, I caught him at night by torchlight down between the boulders at Port Erin. I have spotted one before, but they appear to be rare. He eats anything (including biting my fingers), but his main diet seems to be brown shrimps, worms and certain crustaceans. He is very tame, and is brilliant at swimming upside-down.

Alan Russell, Isle of Man.

The egg capsules of the Lesser Spotted Dogfish are the orangey-yellow purples. You can see the embryo inside. They must at all times stay submerged. I have 6 eggs at the moment in various stages of development.

Phil Hills, Worthing.

I feel, as someone who appreciates the coastline, and often removes things from it, I should also take notice of any changes, treat it with respect and try to return it to what I have taken. My favourite collection place is Whitesand Bay. Years ago I remember seeing a huge amount of Jewel and Snakelocks anemones. This beach takes an awful lot of dumping from burges out at sea. Now the Jewels are gone and the Snakelocks awfully hard to find.

Simon Griffiths, Plymouth.

The Butterfish were very exciting and disappointing. They laid about 150-200 eggs and rolled them into a ball. Then the male (I think) wrapped his tail around the ball. Unfortunately, the Wrasse chased him away and ate all the eggs. The Sand Gobies all spawned under an old scallop shell. 1198 fry were released into the sea.

Kevin Froment, Isle of Wight.

Starfish are delightful, particularly the Cushion Stars, but despite hard feeding, a year seems to be their maximum lifespan in captivity. My favourite fish are small Grey Mullet and the Cornish Sucker.

Peggy Millson, Buckinghamshire.

THE REVIEW



Left: The small specimen is *Pagurus bernhardus* — the larger one *P. prideaux*, from deeper water. Right: *P. prideaux* (*Urolactuca*). Only ever collect one specimen of this invertebrate as this species is difficult to keep.

- 3) **Butterfish** *Pholis gunnellus* 70%
Abundant under stones on all rocky shores. Its prevalence on the shore is the reason for its popularity. It is intolerant of high temperatures (above 19°C), and for this reason is an unsuitable fish in hot summers.
- 4) **Blenny** *Lipophrys pholis* 65%
The success rate in keeping this charming and comical fish is dramatically improved if rocks can be provided above the waterline in hot summers. A tidal tank is even better. Keep the temperature down and the fish will breed and live for over 5 years. Book name: Shanny.
- 5) **Dahlia Anemone** *Urticina felina* ... 65%
Small specimens (up to 5cm base diameter) make an attractive display in large aquaria. Freshly killed prawn provide the best food. Widespread occurrence on rocky shores.
- 6) **Prawns** *Palaeomon* 65%
Attractive and surprisingly complex creatures, that usually end up as a meal for the fish and other invertebrates. Young will be released in aquaria. Hardy.
- 7) **Bullhead** *Eiophrys barbata* 60%
A veritable terror of the rock pools that will swallow fish as large as itself. Also known as the Sea Scorpion or Clobberhead. Very common intertidally and easy to catch. Healthy fish in large clean tanks can tolerate high temperatures for at least two weeks. Easy to keep below 19°C.
- 8) **Snakelocks Anemone** *Anemonia viridis* 60%
Not found on the east coast of Britain. Nevertheless, a strong favourite. Part of the Mediterranean fauna, and an attractive addition to the marine tank. Requires the presence of symbiotic algae to maintain its green coloration.
- 9) **Corkwing Wrasse** *Cremilabrus melops* 50%
Active fish that is found in weedy pools. It

haunts rock ledges, feeding on small mussels and crustaceans. In four years will approach the full grown size of 25cm and be too large and aggressive for most home aquaria. Feeds avidly at 25°C.

10) **Common Starfish** *Asterias rubens*. 50%
Variable frequency on shore, and unpredictable in aquaria. Small starfish are best (3cm maximum). Prefer cooler water. Ensure they obtain adequate nutrition. Sea Mats for the very small, mussels for the larger of these echinoderms.

UNSUITABLE FISH

Several fish are kept which are unable to survive during hot summers. Notably, the Butterfish (70%), but also Montagu's Sea Snail (20%), Lump sucker (20%), and Codling (10%).

Rarities include the Anemone: *Sagartiogeton undatus* found by myself and Dick Manuel (5%), 2-Spotted Clingfish (5%) and the Gem Anemone (5%). Alan Russel from the Isle of Man has kept Topknot, *Zenopsis punctata*, and Octopus. Ian Johnston: Burrowing Starfish, and Simon Griffiths: Red Mullet.

SUITABLE FISH

I have received letters from newcomers wishing to start an aquarium, to experienced hands with 20 years of native marine fish-keeping. Old timers tend to concentrate on keeping fewer of the more unusual invertebrates, or species that they know they can keep in prime condition.

From all reports, the Cornish Sucker, *Lepadogaster lepadogaster*, is ideal. It is quite able to survive in the higher summer temperatures, and it is only a small fish reaching a maximum of 6.5cm (2½in). 15% of correspondents keep this fish. Others suitable in summer are: the Rock Goby

The large Lobster is about 30cm long from the tip of its rostrum to its tail. It is very powerful and will attack anything in the tank, even other large crustaceans. The Grey Mullet are quick, too quick for the Lobster. It needs a tank of its own, and you have to keep your fingers out of its reach!

Len Nevill, Lewisham.
I have kept two marine aquaria for two years now, and have been pleasantly surprised at the amount of interesting organisms to be found in the intertidal zone. I was attracted to tropical marine fish. I was hooked. I was horrified at the prices and unsure of success. So I tried 'native marines'. I am so glad that I persisted. They may not be so colourful, but they are far more interesting.

Chris Tan, Bath.
My aim in keeping 'natives' has usually been to try and achieve a 'rock pool' effect, i.e. to look down on the inhabitants. The water in the aquarium is therefore shallow, about 15cm (6in) deep. I also keep the biological filter out of the aquarium and pump the water through the coral gravel which forms the filter. This makes cleaning the tank and filter much easier.

Tony Taylor, Cheshire.
Luckily I came across your article in the Aquarist, while waiting in a queue. I was instantly compelled to buy the magazine. It is good to know there are other native marine enthusiasts, because, sometimes, when up against problems you feel set aside from other fishkeepers.

Simon Griffiths, Plymouth.

(35% of correspondents keep this fish). Others suitable in summer are: the Rock Goby (35%), 2-Spot Goby (20%), Cushion Stars (20%), Humber Spider Crab, *Pisa armata* (20%), Grey Mullet fry (30%), Hairy Crab (15%), and the Tompot Blenny (10%).

FOODS & WATER

Food is principally mussel, whitefish, prawns, brine shrimp and freeze-dried gamma-irradiated fishfoods. Synthetic marine mixes are extensively used, although a few specialised aquarists and conchologists will go to great lengths to obtain real seawater.

I was very pleased to receive photographs from three of the correspondents. For my photographs I use an Olympus single-lens reflex (S.L.R.) 35mm camera, with a Zuiko 50mm standard lens and a variety of close-up attachments. Lighting is always off-the-camera flash.

During the winter, the mobile seashore life is sparse as the fish and invertebrates have moved off into deeper water. Good luck and good hunting for the summer season.

I would like to receive more details of how long the creatures have been kept alive in aquaria, plus any other interesting observations. If you have any problems, or want help with identification, please write to me at A & P. (SAE for reply, please.)



ORNAMENTAL FISH CONSOLIDATORS LTD.

(IMPORTERS AND EXPORTERS OF LIVE TROPICAL FISH & AQUARIUM PRODUCTS)
371 High Street, Harlington, Hayes, Middlesex UB3 5DQ
UNITED KINGDOM
Tel: 01-897 3099/01-897 3702 Telex: 24210 OFCUK G.

Offering **WEEKLY DIRECT IMPORTS:**

Freshwater Tropical Fish, Marine Fish/Invertebrates and Aquatic Plants from SINGAPORE/
BANGKOK/SRI LANKA/ PHILIPPINES/HONG KONG/SOUTH AMERICA/JAPAN.

BANGKOK Monthly special offers available.

SOUTH AMERICAN } We have large selection in stock and all have been well quarantined
AFRICAN FISHES } on the premises.

JAPAN/ISRAEL Coldwater fish, goldfish and Koi. Please contact us for new price list.

ALL SHIPMENTS WILL BE COLLECTED ON MONDAYS

REPTILES: Regular shipments from Bangkok. Please ring for further information.

★★ **For enquiries, please contact RICHARD CHANG** ★★
STRICTLY FOR TRADE ONLY.

AQUATIC SHOPPING IN BIRMINGHAM

PLANTS

30 varieties all at 70p per bunch, displayed
in our double cascade.

FOOD

Live food, frozen, freeze dried and dry
food in most popular brands.



Open daily 9.00 a.m. - 6.00 p.m.
On main A38 with easy access from M5 and
M42.

BOOKS

A wide range on all aquatic subjects, from
£1.00 to £50.00.



DISPLAY

Admire our 120 gallon HOCKNEY
invertebrate tank or our 375 gallon
SEABRAY tropical community tanks with
TUNZE filtration.



ACCESS &
VISA WELCOME

FISH

Over 100 tanks of tropicals, coldwater and
marines including invertebrates. As direct
importers, we offer fish at very competitive
prices.

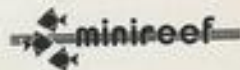


TANKS

We stock SEABRAY, MERMAID and
TAHITI in all sizes up to 6 foot.

PUMPS, FILTERS, POWER HEADS AND HEATERS

All on our shelves at discount prices to suit
all tanks and pockets.



The Fish House Ltd.

1153, BRISTOL ROAD SOUTH, NORTHFIELD, BIRMINGHAM B31 2SL. Tel: 021-476 8098



**AQUARIUM
& POND
SPECIALISTS**

News

FBAS 1988 Supreme Championship backed by Interpet

The Jubilee celebrations of the Federation of British Aquatic Societies will feature strongly at the Brighton Festival of Fishkeeping to be held on 29 and 30 October 1988.

The Banquet Hall at the luxury Ramada Hotel has been booked for the Jubilee Dinner and the 1988 FBAS Supreme Championship will take place in the theatre adjacent to the Corn Exchange where the main festival is being held, the same weekend.

The FBAS has announced that, for 1988 only, the Supreme Championship will be open to all card winners in the championship classes (single fish), plus all Best-In-Show winners at Federation shows which will have taken place from the date of the 1987 Supreme Championship.

In the adjacent hall of the historic Corn Exchange, there will be demonstrations showing beginners how to set up an aquarium, and a team of well-known experts to answer any questions from existing aquarists. A special display of Koi is also planned, together with a limited number of trade stands.

For further details please contact Clare Spice, Interpet Ltd, Vincent Lane, Dorking, Surrey RH4 3YX. Tel: (0306) 881033.

Reptile-Aid

International Reptile-Aid Magazine is a new publication containing features on snakes, lizards, tarantulas, invertebrates, chelonians (tortoises, terrapins and turtles), amphibians, captive breeding, conservation, import/export, Zoo news, world news reports ... and much more besides.

Membership is £6.00 per year (12 issues — incl. postage and packing). For further details, write to Brian Howard (Reptile Aid), 12 Cherry Road, Ainsdale, Southport, Merseyside, PR8 3SE.



Don Forrest, representative from the Culpeper Community Garden Pond Project — Offenders' Scheme receiving a runner-up Award Certificate.

Deserved award

The Culpeper Community Garden Pond Project which we featured in our November issue, has been recognised as making London a better place to live, by being awarded a runner up place in the Architecture & Environment category of the 'Brightening Up London Awards'.

The awards, which attracted 3,000 nominations, were sponsored by the London Electricity Board, in conjunction with LBC Radio, to celebrate 100 years of widespread electricity in the metropolis. After the award's luncheon, at the Savoy Hotel, Don Forrest the project's representative said, "I am extremely delighted. This award is the best way of saying thank you to everyone, but

more important, it will probably mean more to the young offenders than we shall ever realise, for when it was known that we were to receive this award, several of the boys paid a visit to the garden to review their handiwork, which in my thinking, means that the Brightening Up London Awards have played an important role in what has turned out to be a very successful social project".

We, at *A&P* offer Don and his colleagues our most sincere congratulations on their award and wish them all continued success with the Culpeper project.

For further details contact Don Forrest at 18 Cloudesley Place, Islington, London N1 0JA. Tel: 01-278 1014.

Energy saver

Tropical Water Aquatics, of Acocks Green, have been nominated for a Building Energy Efficiency Award (BETA Award) following a change in their method of heating the shop and the fish tanks.

Organised through the Midlands Electricity Board's Business Advisory Service and run by the electricity supply industry, the BETA Awards Scheme aims to reward organisations who can demonstrate how the adoption of electrical techniques has improved their building's energy efficiency.

Originally, a 200-watt heater in each tank, and LPG heater for the shop, caused inconsistent temperature control, condensation and fumes.

An investment of over £600 in six electronic controlled heaters, and adoption of a new electricity tariff, has resulted in annual operating cost savings of £680. Staff and customers at Tropical Water Aquatics are delighted with the investment, reports the M.E.B.

Two M.E.B. area winners from among those nominated go forward with 26 other regional winners to the National BETA Award Final (details to be released in due course).

Further information from: Christine Warwick and Catherine Williams, Harrison Cowley Public Relations, 154 Great Charles Street, Birmingham B3 3HU. Tel: 021-236 7532.

Aquatics course at Sparsholt

Following a comprehensive survey of the aquatics industry in 1985, Sparsholt College identified a need for a good, thorough course of training in aquatics and ornamental fish management. The widespread positive response received by the team showed that such a course should combine husbandry, retailing and product technology skills.

Information provided by the industry was analysed by the Fish and Game Department at Sparsholt who eventually produced a draft proposal of the course content and submitted it for comment to a working party of representatives from the various specialist areas of the aquatic industry. The aim of the exercise was to ensure that the programme reflected a balanced package of the standards of proficiency demanded by the industry.

THE result is a National Certificate in Aquatics and Ornamental Fish Management course scheduled to start in September 1988.

Outline of Course Content Aquatic Husbandry:

Holding System Management, Fish Husbandry (tropical and coldwater), Fish Handling, Feeding, Disease Treatment, Plant Husbandry, Legislation.

Aquatic Science:

Botany, Ichthyology, Nutrition, Disease, Properties of Water, Reproduction.

Design, Display and Landscaping:

Systems and Products, Design, Planning, Pond Construction and Fitting, Decorative Display, Aquaria Display and Fitting.

Engineering & Technology:

Electronics, Plumbing, Craft Skills, Surveying and Excavation, Appliances.

Retail Management:

Art of Salesmanship, Customer Management, Stock Management, Information Technology, Legislation.

Contact: Keith Davenport or John Shaw (Senior Tutor), Sparsholt College, Sparsholt, Winchester, Hampshire SO21 2NF. Tel: (096 272) 441.



From the outside the new 'Atlantis s-series' is sleek, modern and stylish. But it's the design technology inside that's the secret of their remarkable quietness and reliability.

UNIQUE DESIGN TECHNOLOGY

The innovative 'Atlantis s-series' incorporates a new generation of airflow technology. The unique *laminar airflow* system (patent pending), eliminates the turbulent airflow found in a conventional airchamber and reduces noise and vibration to a minimum.

GUARANTEED RELIABILITY

Rigorous quality control procedures and stringent manufacturing specification

are backed up by a full one year guarantee.

ATTENTION TO DETAIL

Meticulous care has been taken over every aspect of the new 'Atlantis s-series' airpumps - from the choice of materials to the easily replaceable felt filter pads and special rubber feet that minimise vibration. Every pack contains a spare diaphragm (two for twin outlets), plus a comprehensive instruction booklet with helpful hints on aeration and filtration.

Why not have a quiet word with your local retailer and you'll discover the secret of the new 'Atlantis s-series' for yourself.

Thomas's (A Division of Mars G.B. Ltd.),
Oakwell Way, Birstall, Batley, West Yorkshire WF17 9LL.

©Registered Trade Mark ©Thomas's 1987.

LISTEN, YOU WANT TO KNOW A SECRET?

THE NEW
Atlantis[®]
s-series



Letters

A finny tale

The amazing mystery of the incredible descending goldfish will probably never be solved.

The main reason for this assumption is that no eye-witnesses have come forward to explain the strange incident, although one or two people feel there may well be at least one high witness!

There is definitely something "fishy" about the whole affair, and it began for me when my next-door neighbour told me he'd found a large goldfish on his lawn.

He was rather surprised, or even shocked, because he doesn't have a garden pool, and neither do any of our other neighbours.

When I met his wife at the front gate an hour or so later she said, "Come through to the garden and I'll show it to you". Naturally I could not work up a lot of enthusiasm about a dead fish... who could?

However, this is where we come to the first almost incredible part of the story. When I saw the goldfish it was a bulky seven inches long and lazing about in half a bucket of rain water. It had been picked up alive and wriggling, and, although a few of its scales lay on the bottom of the bucket, it seemed in quite good health.

The still unanswered question is, how on earth did it arrive on the grass?

It seems reasonable to assume that it came from a pool somewhere nearby, and yet there is no pool nearby. It is extremely doubtful that a cat "fished" it out of water somewhere, because it simply would not have survived.

Equally ridiculous to think that a child threw it from somewhere; and it could scarcely have jumped!

Also, it was a goldfish and not a flying fish!

Strange though it may seem, this one may have done a little flying, for how else could it have travelled?

Which brings us back to the "high witness"... in a word... a bird.

How big a bird for such a fair fat fish or how big a beak or claws to carry it? There were no scratches or marks on the

fish, and the loose scales were probably dislodged by my neighbour, who is not a fish-keeper and probably did not wet his hand before picking up the goldfish in his garden.

Rumour had it that a pair of herons had been surveying the area recently, but isn't it hard to believe that a heron would lose its grip on its natural prey, even if it was gold-plated?

Which brings us to the second, almost unbelievable, part of the story. A week after this baffling incident occurred, exactly the same thing happened again!

Another large goldfish appeared in the same garden and almost in the same spot.

It, too, was picked up alive and resuscitated in half a bucket of rain water. After further local enquiries as to ownership, this one followed its predecessor into the nearest pet shop, where it was no doubt glad to get out of the bucket. After all, there's much more room in an aquarium, and a good chance of meeting some new friends!

Fred Lamb
Tottenham, London.

Early marines

I enjoyed reading Mr. Graham Cox's article on *The Birth of the Marine Hobby* in the January issue but I feel that the date 1861 is rather early for the death of 'the infant world marine hobby'.

W.S. Furneaux's *The Sea Shore* (Longmans, Green, 1903) had a chapter on 'The Marine Aquarium' which gave much information on the subject, including the formula for making artificial seawater and an ingenious apparatus for simulating the rising and falling of the water as in tides. Gosse's friend, the Rev. Charles Kingsley, in *Glaucus or The Wonders of the Sea Shore* (Macmillan 1890 edition) also gave information on the setting up of a marine aquarium and the choice of specimens to put in it. It was only after the 1870's that there was a sudden fashion for public marine aquaria: Brighton in 1872, Southport in 1874, Manchester in the same year, Yarmouth in 1876 and Edinburgh in 1878. The Plymouth Aquarium, although

connected with the Marine Biological Association and opened in 1884, was open to the public.

So the closing down of W. Alford Lloyd's aquarium warehouse did not finish off marine aquaria; there must have been other suppliers catering for the 'marine hobby'.

John Clegg
Grange-over-Sands
Cumbria

Further note from John Clegg

Thank you for putting me in touch with Graham Cox following my letter on *The Birth of the Marine Hobby*. We have, since then, exchanged amicable correspondence on marine aquaria, especially the Brighton Aquarium, of which he was in charge in 1966/67. P.S. My memories of *A & P* go back to A. E. Hodge, the founder, who published my very first article on *Dytiscid* beetles in autumn 1928! So, I'm almost a Victorian antique myself! My article on Goldfish 'monstrosities' (the causes of) was also published in winter 1929.

Editor's Note

Just before my time, John! Many thanks for your continued support over the years — you must be close to a record... or something!

John Dawes

Comment from Graham Cox

Many thanks for the kind comments in your letter concerning my article *The Birth of the Marine Hobby*.

The point which I was trying to make was that Lloyd's shop in London was the first, and to the best of my knowledge, the only, regular business with proper shop premises in Great Britain to offer supplies of a broad range of native marine fishes, invertebrates and plants. I know of a few collectors of native marine life from whom one can obtain, with difficulty, a limited range of creatures in the Brighton area, but they are without exception amateurs, (fishermen mostly), who regard such business as "pin-money" and work in a most irregular

fashion without any formal retail premises or display.

During my time as Curator of Brighton Aquarium in the early '60's, these fishermen were my only suppliers of fishes, and I had to collect all invertebrates and plants myself. This is still the case at Brighton today.

Graham Cox
West Drayton, Middlesex



Supplementary Praise

I've been reading *A & P* since April 1987 and have been very impressed. I have especially been interested in your *Beginners' Supplements* which I have found very useful, being a relative newcomer to fishkeeping myself.

Have I missed any that were issued before April? If so, is there any way in which I can obtain copies?

G. Stanley
Fareham, Hants

Editor's Note

Thank you for your complimentary comments. *The Beginners' Supplements* proved so popular with our readers that we decided to launch a "second level" series this year. The first one, on *Tropical Freshwater Aquaria*, appeared in February. This month we've got one on *Cold-water Aquaria*. Others will follow later on in the year.

Copies of the *Supplements* which you missed are on their way to you, with our compliments.

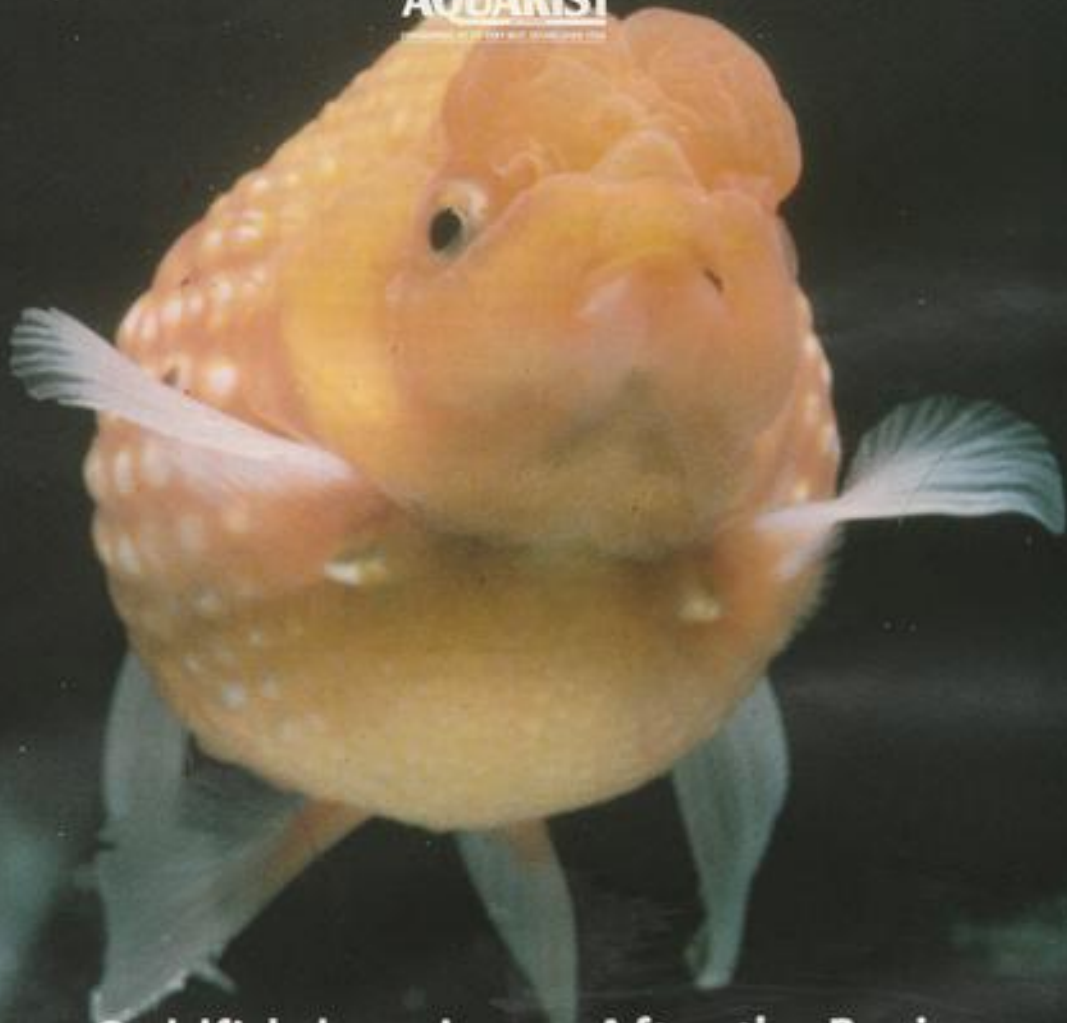
John Dawes

COLDWATER AQUARIA

**A GUIDE
FOR THE MORE EXPERIENCED HOBBYIST**

With the compliments of

AQUARIST



- Goldfish-keeping — After the Basics
 - Planting the Coldwater Aquarium
 - Filtered Facts
 - “Second Level” Coldwater Species

NEW
FORMULA

Tetra AquaSafe

Now even more effective and protective



Tetra AquaSafe is the essential water conditioner for both marine and freshwater aquaria. Now, AquaSafe has been reformulated to give even better protection with its unique money-saving multiple action.

Used at every water change, it makes your aquarium safer by neutralizing the chlorine in tap water and detoxifying dangerous metal ions. Then, AquaSafe coats gills and sensitive membranes and protects the whole fish body against scrapes and wounds — guarding against bacteria and fungus, and ensuring perfect gill and fin regeneration.

Rub some AquaSafe between your fingers, and you can feel how the new, thicker colloid coating will really protect your fish!

Finally, new formula AquaSafe also adds vitamins and carbonates to the water, to build up stamina and vitality and reduce fish stress.

Tetra offers a comprehensive range of care and treatment products, all carefully researched and developed to give your fish the most natural care available. For more details, send the coupon.



Tetra

You can't buy better

Please send me more information on Tetra Fish Care

Name

Address

AP/4/88

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



COLDWATER AQUARIA/FISH SPECIES

"SECOND LEVEL" SPECIES FOR THE COLDWATER AQUARIUM

How do we define "coldwater"? What species, other than Goldfish and small Koi can be housed in such an aquarium? John Dawes provides some answers.

'Coldwater' Aquaria

When an aquarium is described as 'coldwater', it is usually assumed to be 'one in which fish and plants from temperate parts of the world are housed'. Temperate is the word generally used for such regions as Europe and the USA. Yet, this broad classification has several flaws in it. Where, for example, do we fit in those regions of the world generally regarded as 'sub-tropical'?

In Florida, for instance, most so-called tropical species (with notable exceptions such as *Discus*, *Symphysodon* spp.) can easily be cultured in outdoor ponds for most of the year.

Many, like some Barbs (*Barbus* spp.) and the ever-popular Guppy (*Poecilia reticulata*) can be kept outdoors in a number of temperate countries during all but the most severe winters without additional heating.

In general terms, a coldwater or temperate aquarium is one which does not require the provision of artificial heat, either for the maintenance, or successful breeding of the fish it houses. As with tropical aquaria, this definition is a relative one, particularly where 'southern' temperate species are kept in high-latitude regions; for example, the Spanish Killifish, *Valencia hispanica*, kept in, say, Sweden or Scotland.

Common Name

Gudgeon.

Scientific Name

Gobio gobio.

Geographical Distribution

Widely distributed in Europe except for the extreme north and the coastal rivers of the Adriatic.

Size

Up to around 20cm (8in), but usually smaller.

Water Preferences

Highly oxygenated water is preferred. Will withstand the lower range of tropical temperatures, but not for long.

Diet

Livestocks preferred, to the virtual exclusion of anything else.

Breeding

An egg-scattering species which does not appear to have been spawned in aquaria.

Additional Information

Numerous subspecies have been described

Native Aquaria

One other term often associated with the coldwater hobby regards such aquaria as those housing 'native' species. 'Native' is in effect a short form of saying 'native to temperate countries'. Obviously, the term 'native' is illogical, since every fish species has to be native to some part of the world, e.g. tropical fishes are native to the Tropics. But this is how the word is used within the hobby in general.

This terminology could well be an over-spill from the marine hobby where species are divided (in temperate regions, at least) into tropical or native, the latter referring to those species that suffer hardship in heated aquaria.

Within limits, this concept can be applied to freshwater coldwater fishkeeping. Remember, however, that while temperate and coldwater fish such as the European Bitterlings (*Rhodeus* spp.) are described as native, and fish from South America such as the Cardinal Tetra (*Paracheirodon axelrodi*) are termed tropical, these labels are ones that we have invented to suit our own convenience.

Sharply defined lines of demarcation are, to a large extent, artificial human constructs. They are, nevertheless, very useful in attempting to make sense of potentially



The Gudgeon (*Gobio gobio*) can be kept in aquaria much more easily than some people imagine.

but the authenticity of some is questionable. Gudgeon are fast-swimming, predominantly bottom-dwelling fish, but will make mid-water forays in search of food.

Common Names

Red Shiner, Red Horse Minnow or Sandpaper Shiner.

chaotic, naturally-occurring assemblages of organisms. As long as we regard them as such, and not as infallible dictats, it should be quite easy to handle the grey areas, or transition zones, that exist. The fish, after all, manage perfectly well! To them, it makes no difference at all whether they are tropical, coldwater, or whatever.

Some Fish Species for the Coldwater Aquarium

The best-known coldwater species is, of course, the Goldfish, closely followed by Koi. Other popular species include the Orfe, Rudd and Tench, particularly among pondkeepers.

The last three are, however, not ideal aquarium species once they begin to put on some size. They are, therefore, best thought of as pond fish. While the Goldfish is primarily considered to be an aquarium species, especially where the more fancy varieties are concerned, I would like to concentrate on other, less well-known, species in the rest of this article.

I use the word "concentrate" relatively since, in an article of this length, only few details can be provided on each of the selected species. Even so, they may serve to raise some degree of awareness which can then be followed up by anyone who decides to concentrate on these fish.

Scientific Name

Notropis lutrensis.

Geographical Distribution

Central North America to Mexico and west as far as California and Colorado.

Size

Around 8cm (3.2in).

Water Preferences

Not critical as long as temperature does not rise above 25°C (77.5°F) in summer and is kept cooler than this in winter.

Diet

Most foods, but livefoods preferred.

Breeding

Males develop deep coloration and small white pimple-like growths (called nuptial tubercles) on the gill covers and all over the head and snout. Eggs are laid in a shallow depression.

Additional Information

This is a very active species which can disturb the more sedate members of the tank community.

THE AMPHIBIOUS TEAM

Don't ask cellar pumps to work long hours! The amphibious P1800 is specifically designed for water garden application and is ideal for continuous filter usage unlike cellar pumps which are designed to run only for short periods.
Features: 175 watts, 10m cable, 1 1/4" external threaded outlet.



Like the rest of the team it has the unique disc motor design. The motor is completely sealed from the water.

THERE IS NO SHAFT.

The only moving part is the impellor which works on magnetic drive.

RRP £149.00 inc VAT

LED BY THE BRAND NEW P1800



BETTER WATER GARDEN PRODUCTS **BETTER WATER GARDEN PRODUCTS** **BETTER WATER GARDEN PRODUCTS**

Blagdon Water Garden Centre Limited, Unit 6-7, Watrow Industrial Estate, Commerce Way, Highbridge, Somerset, TA8 4AG
Telephone: 0278 781556 Fax: 0278 782079

STAPELEY'S SPECIAL FEATURES



- EUROPE'S LARGEST WATER GARDEN CENTRE - probably the most complete range of pool equipment in the World. Call and see 40,000 Fish-kept in probably the most sophisticated and disease controlled environment in the country.
- Vast quantity of aquatic moisture and poolside plants (over 50 Varieties of Water Lillies).
- Tropical Aquarium housing over 200 quarantine and display tanks-plus lots of ancillary equipment.
- Liners, Fountains, Ornaments, Pool Lighting etc.
- Incredible display of Aquaria to suit everyone.
- Superb selection of fully quarantined Tropical Marine Fish.

SEND TODAY FOR YOUR **FREE** 60 PAGE FULL COLOUR GUIDE

If you cannot visit send for your mail order illustrated guide, contains full information on:
Fountains, Aquatic Plants, Pools, Pool Construction, Cascades & Waterfalls, Pumps, Waterfall & Fountain Kits, including comparative performance tables;
Garden & Pool Lighting and Pool sundries.

Please send me a copy of the complete illustrated guide to water gardening - FREE and without obligation. I enclose two 1st class stamps for postage.

Name _____
Address _____

STAPELEY Water Gardens (Free only to postal applicants)
STAPELEY WATER GARDENS, Dept. AQ4,
Stapeley, Nantwich, Cheshire. Tel: 0279 628111.

COLDWATER AQUARIA/FISH SPECIES

Common Names

Fathead Minnow, Red Minnow and Rainbow Dace.

Scientific Name

Pimephales promelas.

Geographical Distribution

North America.

Size

Around 10cm (c. 4in).

Water Preferences

Not critical. Wide temperature range tolerated.

Diet

All foods.

Breeding

Males are distinguished by their fatter heads and by a notch on the front edge of the dorsal fin. They develop conspicuous 'pimples' (nuptial tubercles) on the snout during the breeding season. Eggs are laid on the underside of floating leaves from late spring onwards.

Additional Information

This species is now almost exclusively available in the golden form. It is a very active, hardy, shoaler which can disturb more sedate fish, even though it is not an aggressive species.

Common Name

Bitterling.

Scientific Name

Rhodeus amarus.

Synonym

Rhodeus sericeus.

Geographical Distribution

Europe, with the following notable exceptions: Spain, Portugal, southern France, Italy, northern Finland, Sweden, Ireland, Scotland, Wales and the Balkans. Introduced into some parts of England.

Size

Around 9cm (c. 3.5in).

Water Preferences

Not critical, but prolonged tropical temperatures must be avoided. (See Breeding.)

Diet

All foods, particularly livefoods, but also eat vegetation in the wild.

Breeding

Bitterling require the presence of a freshwater mussel for spawning purposes. Eggs

The Fathead Minnow (*Pimephales promelas*) is available in the wild form or, more commonly, in this golden version.



are deposited within the inhalent siphon of the mussel by means of an extended ovipositor (egg-laying tube). The male then releases sperm around the same opening and these are taken in by the mussel in its incoming water current. The eggs are therefore fertilised inside the mussel where they remain until they hatch two or three weeks later. Chances of spawning success are improved if the pair is subjected to a period of cool temperatures, i.e. around 10°C (50°F).

Additional Information

Although Bitterlings have been well-known among European aquarists for many years, doubts still appear to remain concerning their correct scientific name. Some books use *R. amarus*, while others use *R. sericeus*. Still others use *R. sericeus amarus* or *R. amarus sericeus*. According to Wheeler (1985), the current valid name is *R. amarus* (though he himself used *R. sericeus* in an earlier publication) and *R. amarus sericeus* should be reserved for a separate population of Bitterlings, the subspecies found in northern China.

Common Names

Pale Chub or Zacco.

Scientific Name

Zacco platypus.

Geographical Distribution

Far East.

Size

Around 18cm (c. 7in).

Water Preferences

Not critical in terms of pH, but well-aerated, filtered conditions are preferred.

Diet

All foods.

Breeding

The sexes are quite easy to differentiate — males have a longer anal fin than females. They also develop nuptial tubercles, in a similar way to many other coldwater Cyprinids. No reports of successful aquarium spawnings are yet available.

Additional Information

Z. platypus is a relatively recent import into Europe from the Far East. It is a fast-swimming fish with excellent jumping ability. A good aquarium cover is therefore essential.

Common Names

Opaline or Moderlieschen.

Scientific Name

Leuciscus deloneatus.

Geographical Distribution

Mostly central and eastern Europe and northwards to southern Sweden.

Size

About 12cm (c. 4.5in).

Water Preferences

Not critical; can withstand tropical temperatures and low oxygen levels.

Diet

Will accept a range of foods, but prefers livefoods.

Breeding

Egg strips are looped around plants and are then guarded by the male. No detailed reports of aquarium spawnings are available yet.

Additional Information

This fairly recent introduction to the coldwater hobby is fast gaining popularity in Europe.

Common Names

Spotted, Blue or Channel Catfish.

Scientific Name

Ictalurus punctatus.

Geographical Distribution

Widely distributed in eastern North America and southwards as far as northern Mexico.

Size

Up to 1.2m (c. 4ft).

Water Preferences

Not critical. Cool temperatures preferred, but will tolerate lower tropical temperatures.

Diet

Large livefoods, such as earthworms and meat-based foods.

Breeding

No aquarium spawnings have been reported.

Additional Information

Owing to the large size of this species (as well as its predatory habits), only juvenile specimens are suitable for the 'average' coldwater aquarium. *I. punctatus* is available in wild-type and albino forms. Other species also available are *I. (Ameiurus) melas*, the Black Bullhead and *I. (Ameiurus) nebulosus*, the Brown Bullhead. Both are predatory.

Common Name

Weather or Pond Loach.

Scientific Name

Misgurnus fossilis.

Geographical Distribution

Eastern and central Europe.

Size

Up to 35cm (c. 14in), but usually much smaller.

Water Preferences

Can tolerate a wide range of water and temperature conditions.

Diet

All foods, particularly bottom-dwelling livefoods.

COLDWATER AQUARIA/FISH SPECIES



Misgurnus and other "weather" loaches become particularly active before a storm.

Breeding

Has only rarely bred in aquaria. The male twists his body around the female's and the pair then rise to the surface, where eggs are scattered among vegetation.

Additional Information

This species is famous for its reaction to a drop in barometric pressure (as experienced before a storm). At such times, it becomes particularly active, hence its ability to 'predict' the weather. The substratum of a Weather Loach tank should be fine enough to allow for this species' burrowing activities.

Common Name

Pirate Perch.

Scientific Name

Aphredoderus sayanus.

Geographical Distribution

Northern, southern and eastern USA.

Size

Around 13cm (5in).

Water Preferences

Not critical, but probably softish for spawning. Wide temperature range (though not tropical) tolerated.

Diet

Predominantly livefoods.

Breeding

Females guard eggs laid in a simple nest.

Additional Information

A. sayanus is a nocturnal predator which

is best kept on its own. Tank lighting, if provided, should be subdued. Dense clumps of shade-loving plants should also be provided. The most unusual feature of this remarkable fish is that its anus migrates during growth! It starts life in the 'normal' position, directly in front of the anal fin, but gradually moves forward as the fish grows, ultimately coming to rest in the adult's throat region.

Common Name

Pigmy Sunfish.

Scientific Name

Epiplatys evergladei.

Geographical Distribution

North America, from Carolina to Florida.

Size

Around 3.5cm (1.4in).

Water Preferences

Medium-hard to hard, alkaline water, between 8-10°C (46-50°F) during winter, but considerably higher, e.g. 15-25°C (59-77°F), in summer.

Diet

All foods, particularly livefoods.

Breeding

Eggs are scattered among fine-leaved vegetation and hatch out in 3 or 4 days.

Additional Information

E. evergladei males are quite aggressive, despite their small size. Dense clumps of vegetation should be provided for this fish which should be kept in a species tank, i.e. not a community tank. Other Pigmy Sunfishes include: Black-banded Sunfish — *Enneacanthus (Mesogonistius) chaetodon*; Diamond or Banded Sunfish — *E. obovatus*; Blue-spotted Sunfish — *E. gloriosus*.

Common Names

Pumpkinseed or Sunfish.

Scientific Name

Lepomis gibbosus.

Geographical Distribution

North America, from Maine to Florida, and as far as the Mississippi.

Size

Around 15cm (6in).



An American favourite that spawns almost in cichlid fashion — the Pumpkinseed (*Lepomis gibbosus*).

Water Preferences

Clean, well-oxygenated water between 10-22°C (50-72°F) is preferred.

Diet

Dried food accepted, but livefoods preferred.

Breeding

In most species, males excavate a depression in the substratum to which they attract females and in which the eggs are laid. Males are also responsible for guarding the eggs while they develop.

Additional Information

Pumpkinseeds are best kept on their own, even though they are not generally too aggressive. Other larger Sunfishes include the Bluegill — *L. macrochirus*; Orange-spotted Sunfish — *L. aurula*; Long-eared Sunfish — *L. megalotis*; and the Flier — *Centrarchus macropterus*.

Common Name

Eastern Mudminnow.

Scientific Name

Umbra pygmaea.

Geographical Distribution

Originally from the eastern seaboard of the USA, from New York to Florida. There are a few introduced populations in France, Germany and the Netherlands.

Size

7.5cm (3in).

Water Preferences

Extremely wide tolerance of water and temperature conditions (though not tropical temperatures). This species is even reported to have survived being frozen solid for a time. It also tolerates low oxygen levels.

Diet

All foods, particularly bottom-dwelling livefoods.

Breeding

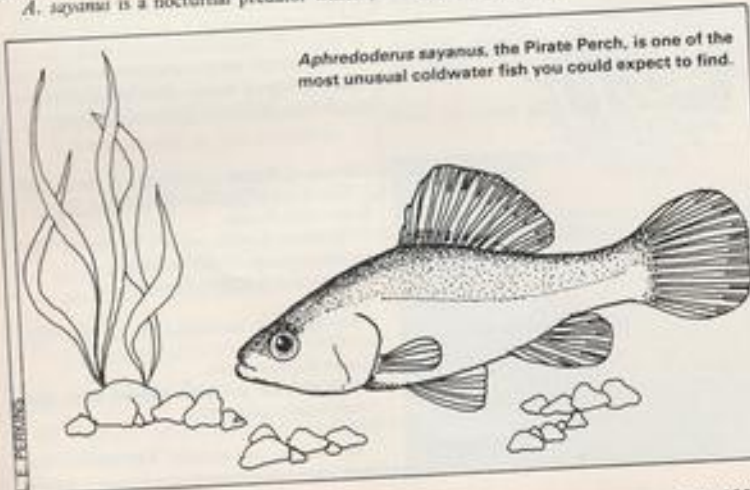
Eggs are deposited in a depression or cave and are guarded by the female.

Additional Information

U. pygmaea is a peaceful, retiring fish. Other species of *Umbra* are: *U. krameri*, the European Mudminnow, and *U. limi*, the Central Mudminnow.

NOTE

The text for this article is partly based on the relevant sections in *A Practical Guide to Keeping Freshwater Aquarium Fishes*, by John Davies, Published by Hamlyn, ISBN: 0 241 600 55183-0.



Aphredoderus sayanus, the Pirate Perch, is one of the most unusual coldwater fish you could expect to find.

SO MUCH CHOICE!

Probably the largest aquatics retailer in the UK, Bristol Aquatic Centre have 5000 sq ft dedicated to fish from all over the world, with an average of 1000 species in stock at any one time. The choice is amazing.

Something for Everyone

With 300 display tanks and 6000 gallons of indoor ponds, there's something for everyone - tropicals, marines, brackish, and coldwater (plenty of Koi) and all the plants & accessories you'll ever need.

Clean and Healthy

We keep 100 tanks just for quarantine. Once cleared, 8 centralised filtration systems (and a UV sterilised marine section) make sure our fish stays clean and healthy. With less risk to you.

Well worth a trip - come and see us soon.

Good selection of African Cichlids and Rare Cat Fish always in stock.

● Cafe & Refreshment bar
● Families welcome.

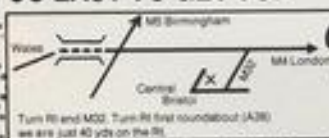
OPEN 6 Days a Week
9.30 am - 6.00 pm
(8.00 pm Thurs)

SPECIAL OFFER
Buy 4 fish
Get 1 FREE



BRISTOL AQUATIC CENTRE

SO EASY TO GET TO.



Stock availability & Sales
(0272) 420927
4-10 Stokes Croft, Bristol BS1.

In our experience water gardening is 90% advice and 10% selling

WE STOCK:

- 25 VARIETIES OF WATER LILIES
- 7 VARIETIES OF FLOATING PLANTS
- 4 VARIETIES OF DEEP MARGINAL PLANTS
- 10 VARIETIES OF OXYGENATING PLANTS
- 62 VARIETIES OF MARGINAL PLANTS
- 5 VARIETIES OF BOG PRIMULAS
- 6 VARIETIES OF WATERSIDE FERNS
- 10 VARIETIES OF GRASSES AND BAMBOOS
- 25 VARIETIES OF MOISTURE LOVING PLANTS

Our Coldwater Fish House contains all the popular varieties of Pond Fish including Koi.

We carry Butyl Liners, Pumps, Filters, Cascades and all the usual accessories, including a large range of traditional and oriental statuary such as Lanterns, Buddhas, Foo Dogs etc.

"A Fishkeepers guide to Koi" by Barry James. Price £5.45 p&p included. Buy from us autographed FREE.

EVERGLADES AQUATIC NURSERIES

BAUNTON, Nr. CIRENCESTER, GLOS.
Telephone: Cirencester 4656. Prop. Barry James

Opening times Tuesday-Sunday 10am-1pm, 2pm-5pm
Closed all day Monday except Bank Holidays.

EHEIM Fountain Pump Set



This high quality set (Eheim ref. no. 3150) comprises the EHEIM universal pump, a riser pipe and an easy-to-clean nozzle head.

The centrifugal submersible pump has an impressive output of 1200 l/hr (364 gal/hr) with a current consumption of only 26 W and comes complete with an integrated pre-filter to trap coarse particles of dirt in the suction area. The spray can be easily adjusted by turning a regulating clip on the riser pipe to give any height fountain up to a maximum of 1.05 m (41 in). And, if less than the maximum spray is utilised, it is possible to connect a second water supply to, say, a waterfall from a by-pass hose connection which forms part of the regulating clip.

John Allan

AQUARIUMS LIMITED

Eastern Way Industrial Estate, Bury St Edmunds, Suffolk IP32 7AB
Telephone: (0284) 755051

Australian Agent: Aquacenta Pty., Ltd. 53 Garama Circuit, Kingsgrove, N.S.W. 2208
USA Agent: Hawaiian Marine Imports Inc. PO Box 918687, Houston, Texas 77215

Marathon - the best Motor

When you need real power in the aquarium, the new range of Marathon Motor Filters are way out in front. Developed over the past six years by Sacem of Italy, Marathon Motor Filters from Interpet represent a real advance over the rest of the field.

The new Marathons have been designed around the SF110 Power Unit which enjoys unparalleled reliability and is only one of the many features built-in to this excellent range.

Research and Development

Innovation and technical excellence are bywords for all Interpet products.

A refusal to accept second best and yet, through careful design and modern manufacturing techniques maintain prices to suit everyone's pocket.

Such is the case with the Marathon range of Outside Motor Filters which are unsurpassed in the combination of performance, output, consumption and price.

The three models available cover all aquaria up to 700 litres and are suitable for both freshwater and marine use.

The powerful pump is virtually silent (a factor due to the advanced Rotating Magnet Technology which is the heart of the filter) and the only moving part - the rotor now incorporates extra large bearing mounts which ensure its continued year-in, year-out reliability.

The pump design also features very low energy consumption with even the most powerful model rating only 10 Watts at an output of 750 litres/hour!

The pump itself is built into the filter-head giving an amazingly compact unit with a large capacity filtration container.

Large bore hoses feed to and from the aquarium and among the novel design features is a tube locking device ensuring the hoses cannot accidentally part company with the filter.

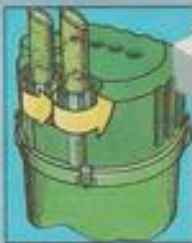
Also, built into the filter-head of the 400/700 models, is a carrying handle housing a drawer for storage of spares.



SF110 with Rotating Magnet Technology



New extra large bearing mounts



Marathon Tube Locking Device

Maintenance

Clearing and maintaining the Marathon is simplicity itself.

A flick of the quick release clamps and the filterhead lifts off the container allowing replenishment or cleaning of the filtration media with very little fuss.

The rotor, too, can be removed quickly with a twist of the bearing housing.

A wash under the tap and once again it's ready for work.

The pipework supplied includes a rigid inlet pipe with a gravel guard, a spray bar (which provides excellent aeration), flexible hoses and clips.

To aid the cleaning operation, Interpet have a set of three filter brushes to cope with different diameter hoses and there is also a flexible brush to reach those parts other brushes cannot reach!

Choosing the Filter Media

For your Filter to reach maximum efficiency - the choice of filtration media is all important and once again it is Interpet's scientific evaluation that provides the answers.

The ideal filter will not just remove suspended particles from the water but also maintain an ecological balance too.

Not allowing noxious chemicals to build-up, neutralising organic impurities (particularly in marine aquaria), and encouraging the growth of an active bacterial bed.

This can be done by using a combination of products exclusively available from Interpet.

For many years Interpet have been at the forefront of aquarium technology and the new range of Marathon Outside Motor Filters are an example of the best in aquaria-care.

The development of new, natural filter media stems from a deep scientific understanding and precisely aimed research. This has given the modern aquarist simple yet totally effective solutions to problems which only a decade ago seemed insoluble.

For an easier and more enjoyable hobby, always trust Interpet.



tor Filter in the long run.



Diagram of Marathon Outside Filter set up

Choosing the Filter Media

- Polymer Wool** This special, inert material has a raised fibre which traps small particles of suspended matter, polishing the water so that a properly packed filter leaves the tank crystal clear. And, as always with Interpet, there's a bonus. This wool can be washed and reused several times.
- Activated Aqua-Carbon** A high quality heavier than water bone carbon that has a high adsorptive power and which quickly establishes a biological bed. Ideal for freshwater or marine use, Aqua-Carbon can be packed into the new Interpet Fine Mesh Bags for ease of handling.



Nitecs - Ceramic Cylinders - Quartz Chips

- C100 (Zeebic)** A discovery of almost importance to the freshwater aquarist, C100 is a mineral - Glauconite - which has the natural ability to remove waste products such as ammonia and nitrites from the water. Aquaria filtered through C100 have shown fish to be more resistant to disease, grow faster, show better colour and breed more readily. And the Interpet bonus! Regenerate C100 by washing in a saline solution.
- Nitecs** This is a revolutionary biological filter medium for both freshwater and marine aquaria. Nitecs quickly establishes a highly active bacterial bed and breaks down harmful ammonia, ammonium nitrites and nitrites. Working in two different biological purification processes at the same time, Nitecs reduces the need for water changes and promotes healthy fish, invertebrates and plants.
- Ceramic Cylinders** A specially shaped medium for all biological filters. The hollow cylinders offer a greater surface area than other filter materials promoting a better bacterial action.
- Quartz Chips** An ideal biological filter medium. Totally inert and produced from the purest crushed quartz.



INTERPET LTD - DORKING - SURREY

Marathon 700 Model - 4.4 litres Actual Power - 7 watts For tanks up to - 400 litres

MARATHON 700 MODEL Max. Flow - 750 litres/hour Body Capacity - 5.4 litres Actual Power - 10 watts For tanks up to - 700 litres
COLDWATER AQUARIA SUPPLEMENT TO AQUARIST AND PONDKEEPER APRIL 1988 \$7



King British

Manufacturers of Tropical & Coldwater flaked fish foods and fish medicines

The most comprehensive range of pond foods and water treatments available. King British fulfils all your needs.

Distributed to the trade by all leading wholesalers. Sold by all good aquatic shops, pet shops and garden centres.

Quality

Best Value

Reliability



➤ POND CHIPS

➤ POND PELLETS

➤ RAINBOW PELLETS

➤ KOI BLEND

➤ GOLDFISH FLAKE

➤ GREEN ALGAE CONTROL

➤ PLANT FOOD

➤ ENVIRONMENT CONTROL

➤ WATER DECHLORINATOR

➤ FUNGICIDE

KING BRITISH, HAYCLIFFE LANE,
BRADFORD BD5 9ET, WEST YORKSHIRE, ENGLAND
TEL: BRADFORD 0274 573551 (3 lines)
TELEX: 517722 KINGBA

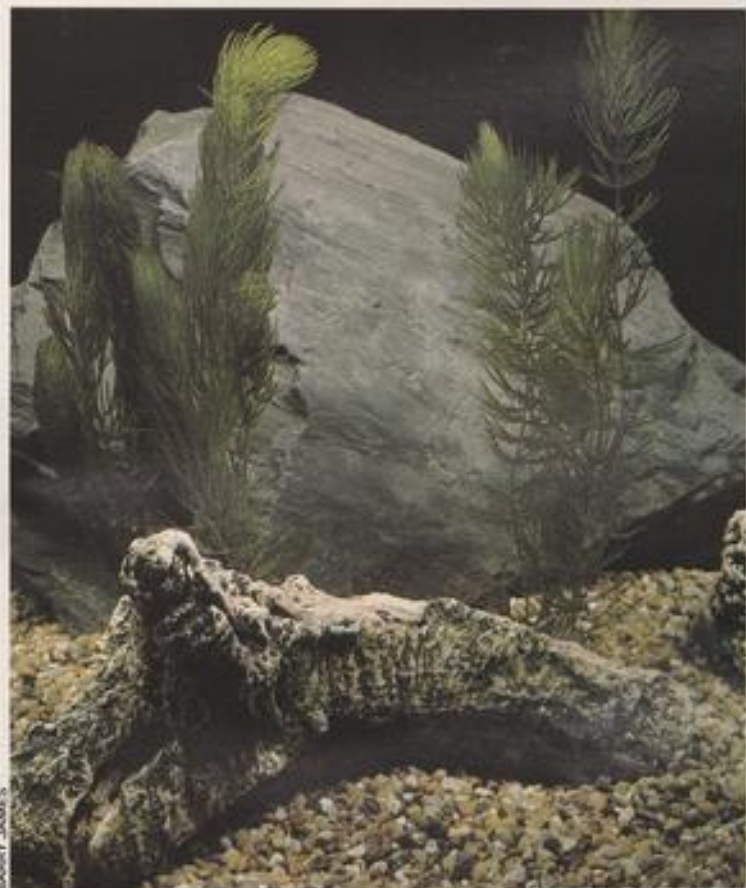
COLDWATER AQUARIA PLANTS

PLANTING THE COLDWATER AQUARIUM

Despite common belief, it is possible to have a well-planted coldwater aquarium. What to plant — and how to plant it — are two key factors tackled by **Barry James**.

Aquaria intended to house temperate species of fish and plants pose several problems to the aquarist. Two problems, however, may be identified which must be overcome if the installation is to be a success.

Firstly, all species derived from carp ancestors are naturally robust, predominantly bottom feeders, and omnivorous in their dietary requirements. This means that Goldfish and Koi will dislodge plants from the substrate in their incessant search for food, and will devour succulent species of plants.



BARRY JAMES



BARRY JAMES



BARRY JAMES

Top: The Straight Vallis is, perhaps, the best known of all coldwater aquarium plants. Above: The Giant Sagittaria can form an impressive display when several specimens are planted in a single plot. Left: Two species of *Ceratophyllum* (Hornwort) are available, the tropical, slenderer one (*C. submersum*) and the thicker, coldwater type (*C. demersum*). Both are shown "planted" for maximum effect, although they are more often used as floating plants.

ORANDA
TRADE ONLY
IMPORTS

*Hartwell Lodge, Hartwell, Northampton NN7 2EW
Tel. (0604) 863978, 863251. Telex: 31462, answer back TFF01 M=9*

COLDWATER

*Regular Shipments from Europe, Israel, Japan and Northern China. Chinese Fancies, all varieties and sizes. Coldwater Pondfish, vast selection of species.
Please telephone or write for Current Lists*



FRESHWATER

Tropical Freshwater Fish, always available, from Singapore, Hong Kong, Indonesia, South America, Africa, Australia and Malasia.



MARINE

Tropical Marine Fish and Invertebrates. Continually changing stock, from: Caribbean, Indonesia, East Africa, Hawaii, Sri Lanka, Somoa, Fiji, Australia and Malasia.

HARROW KOI CO.

(Wholesale and Retail)

Rear of

269 WATFORD ROAD, HARROW, MIDDLESEX

TEL: 01-423 0208

Situated on the main A404 between the Bernie Inn and the Northwick Park Hospital.



KOI AUCTION NOTICE

Following the enormous success of our last auction (over 700 people attended) our next sale will be held on **SUNDAY, APRIL 10th** at **12.30pm** in the marquee as previously.

All 150 lots have been filled and included in the sale will be many high grade Koi in all varieties sized from 6in to 24in plus. Most to be sold without reserve.

On this day only we will open at the later time of 11.30am for viewing with the sale commencing at 12.30pm sharp. Food and beverages will be available as usual, so come along and join in with what has become a twice yearly "koi event".

A great day out! . . . At Harrow Koi only the fish got wet!

Opening time (sale day only):
11.30am onwards.



Tuesday-Friday 9.30am-6pm.
Closed Monday.

COLDWATER AQUARIA/PLANTS

— especially if their normal diet is deficient in plant-derived protein. However, there are now a large number of new species of other fish genera being imported which have neither of these vices. But, as Fancy Goldfish are the choice of most coldwater fish fans, I shall principally concern myself with setting up and planting aquaria with these varieties in mind.

So-called coldwater plants hail from temperate regions of the globe. They are used to cold/frigid winters — at which time they hibernate — and to warm/hot summers, depending on the actual county of origin.

They are 'long day plants'. This means that, during the warmer months, when in active growth, the sun may shine for up to 16 hours per day. For this reason many of these plants, which include most of the species endemic to the British Isles, will only have a short life in aquaria where it is difficult to duplicate, not only the photoperiod, but also the hibernation period. Therefore, most of the plants suitable for long term use in aquaria are those coming from sub-tropical areas, where resting periods are short; they are true perennials as far as the aquarist is concerned.

Setting up aquaria for coldwater fish involves slightly different techniques to those used in tropical aquaria due to the aforementioned 'rooting' activities of the fish. The substrate layer of laterite clay should be put in the same way as for tropicals, but it should be covered with a fine-mesh gravel tidy, as used in marine aquaria. The plants should then be potted in 1½in mesh pots using rockwool and basic fertiliser tablets. The pots stand directly on the gravel tidy and clean gravel poured around them until only the top rim

of the pot is visible. Rounded pebbles, rocks and bogwood are then placed around each pot, resting on the rim. A little extra gravel poured into the cracks should make the task of uprooting behind the capability of even Goldfish and Koi.

The lighting requirements are exactly the same as for tropical aquaria. Fluorescent tubes at the rate of 20 watts per square foot of surface area will hold good for aquaria up to 15in (38cm) in depth. The lights should be left on for about 12 hours per day.

Two tubes will be needed; a mixture of one Truelight/Sunglow and one Grolux/Aquaglow will give good results. Overhead suspended lighting such as Floaset Mercury Vapour, or Sungrow Tungsten lights will be equally acceptable.

Fertilisation should consist of regular dosages of both Trace-Element and Basic Fertilisers according to the manufacturers' instructions.

SUITABLE "BUNCH" PLANTS

Vallisneria spiralis (Straight Vallis)

This grass-like plant is well suited to temperate aquaria. It reproduces fast by runners and is suitable for the rear of the aquarium. Place 5 plants in a pot.

Myriophyllum elatinoides (American Milfoil)

This plant, with its whorls of rich-green leaves, deserves to be better known. It is the best of the Milfoils and is freely available in this country. Needs frequent pruning. Plant 5 plants in a pot.

Egeria densa (Giant Elodea)

The commonest species available, stocked by every pet shop. A fast grower and, again,

needs frequent pruning. Place at the rear of the aquarium. Plant 5 plants to a pot.

Ludwigia mullertii (Red Ludwigia)

First-class plant for the rear of the tank. In good light the foliage is bright-red, especially on the undersides of the leaves. Plant 5 plants to a pot.

Cabomba caroliniana (Green Cabomba)

Very well known as a tropical aquarium plant, this species will also do well in the indoor coldwater aquarium if the ambient room temperature is maintained at around 65°F (18.5°C) or more. If successful, this species needs frequent pruning to encourage the production of side shoots.

SPECIMEN PLANTS

Nuphar luteum (Eurasian Spatterdock)

This impressive plant is a member of the Water Lily family. In the aquarium its tuber should be planted horizontally and covered with a large flat rock to hold it down until it has had a chance to root.

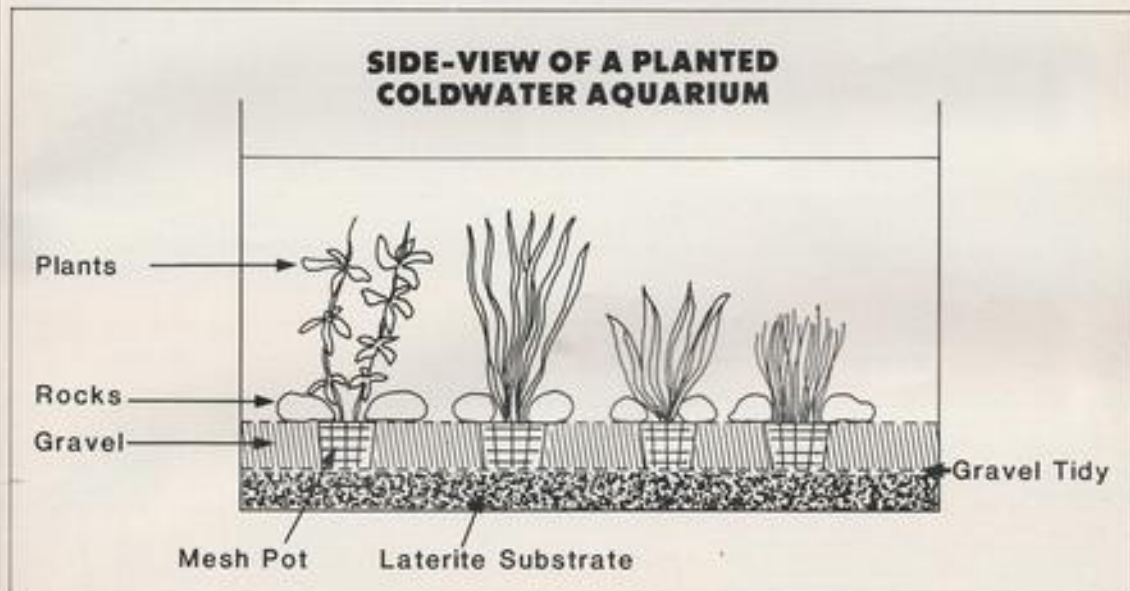
Sagittaria platyphylla (Giant Sagittaria)

Several of these plants, planted together in a 2in pot, will make a fine specimen planting. The broad, strap-like leaves are dark green and may reach a length of 12in (30cm).

MIDDLEGROUND PLANTS

Vallisneria tortifolia (Corkscrew Vallisneria)

This variety grows normally to about 8in (c.20.5cm) and is ideal for this area of the aquarium. The plant grows quickly and spreads by underground runners. Plant 5 to a pot.



THE LAHAINA REEF DEVELOPMENT PROGRAMME



1 Invertebrate Smorgasbord

Contains essential growth factors for the proper development and metabolism of invertebrates. This highly concentrated formula promotes the absorption of nutrients and acts as a coralite builder.

£7.95

2 Invertebrate Gourmet Gumbo

Provides a varied diet of high quality nutrients consisting of shrimp and homogenized gourmet vegetables.

£7.95

3 Invertebrate Target Food

Specially designed for the direct feeding of corals and anemones. Each bottle is supplied with a syringe and plastic tubing to feed a nutritious meal consisting of shrimp, homogenized vegetables, natural vitamins and chlorophyll-rich spirulina directly into the mouths of target corals and anemones.

£7.95

4 Invertebrate Appetite Stimulant

Contains natural lipids, amino, vitamins and minerals to stimulate corals and anemones to absorb the nutrients they need for growth.

£5.95

5 Invertebrate Vitamin Formula

This preparation contains vitamin B complex, for soluble vitamins and minerals in a bio-stabilized form. The product increases metabolism while promoting coral growth.

£5.95

6 Invertebrate Calcium Supplement

Contains several rich organic and inorganic sources of calcium, crucial for the growth and development of corals and other invertebrates. The formula ensures the rapid uptake and metabolism of calcium to promote optimal growth of invertebrates.

£5.95

7 Aquatic Plant Food

This unique product contains all of the major and minor nutrients required by fresh and saltwater plants. The formula discourages the growth of undesirable hair algae and promotes the development of desirable macroalgae without disturbing the pH balance of the aquarium.

£5.95

8 Macroalgae Iron Supplement

Provides a concentrated source of iron which is essential for the growth and development of macroalgae. Periodical application maintains the desired level of iron.

£5.95

9 Macroalgae Micronutrient Supplement

This preparation contains micronutrients that are often missing from synthetic sea water and other aquatic plant foods. Use of this product with Coralife Aquatic Plant Food and Macroalgae Iron Supplement provides the entire spectrum of nutrients required for the rapid growth of macroalgae.

£5.95



Introducing the complete building plan for your Coral Reef

Now, for the first time, it is easy to bring the natural beauty of a coral reef to your aquarium. Corals, anemones and other invertebrates have had a difficult time surviving in closed systems because of a lack of proper nutrition and lighting conditions. Our marine biologists have developed eight new products that not only ensure the survival of invertebrates, but encourage their growth as well. When these products are combined with our metal halide lighting system, you can develop the most beautiful miniature coral reef.

It is difficult
to see where
Nature ends . . .



An aquarium with Coralite Metal Halide Lighting is like . . . Sunshine

The only light more natural than our metal halide lighting system is the sun itself. Our lamps will produce healthy, accelerated growth in your invertebrate community. Any size or shape of aquarium can be illuminated with Coralite lamps. Available in black, brown or white. Other colours, P.O.A.



- Protective UV absorbing glass lens
- Fan-cooled for virtually no heat generation

LENGTH	SUBS.	LUMENS	PRICE
6	2-175 Watt	43,000	£291
4	2-175 Watt	30,000	£201
2	1-175 Watt	15,000	£101

Remote ballast with 15 foot lead and plug included. P&P and insurance extra.



Made to measure sizes available

Introductory prices valid until 31st May, 1988

AND LAHAINA BEGINS



Patents Pending

CORALIFE FOODS, CORALITE LAMPS & LIVING REEF AQUARIUMS FROM

LAHAINA AQUARIUM SYSTEMS INTERNATIONAL

SOLE EUROPEAN DISTRIBUTORS FOR CORALIFE PRODUCTS

SCHOOL LANE, UDIMORE, RYE, E. SUSSEX

TEL: RYE 0797-224237 OR 058-083 811. FAX "LAHAINA" 0797-224710

Factory Units: 8 & 9 Ockham Ind Est., Dagg Lane, Ewhurst Green, Robertsbridge, E. Sussex TN32 5RD.

Send £2 for full information pack.



Scottish Agents: Ocean Wave Aquariums, 0463 241145/236548



MIDLAND WATER LIFE

Come and see us for:

- Excellent Displays
- Large Stocks
- Professional Advice
- Most centres open seven days a week

AQUARIA AND WATER GARDEN SPECIALISTS

AQUARIUMS

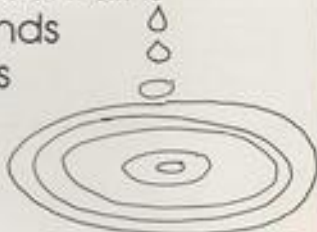
- Air pumps
- Fish Foods
- Treatments
- Filters
- Accessories
- Books
- Plants

FISHES

- Tropical Freshwater
- Tropical Marine
- Koi Carp
- Coldwater
- Pond Fish

PONDS

- Pumps and Fountains
- Pre-formed Ponds
- Pond Treatments
- Pond Plants
- Accessories



*Where to find
your nearest*

**MIDLAND
WATER LIFE**

BROMSGROVE 156 High St
Bromsgrove, Worcestershire
Tel: 0527 79297. Open: Mon-Fri
9.30-8.00 Sat 9.30-6.00 No marines



COVENTRY Russells Garden
Centre, Mill Hill, Baginton,
Coventry. Tel: 0203 639075
Open: 7 days a week



DARTFORD Howley Road Garden
Centre, Howley Rd, Dartford, Kent
Tel: 0322 91221 No Marines
Open: 10.00-6.00 7 days a week



DERBY Wyevale Garden Centre
84 Burton Road, Findern, Derby
Tel: 0332 550140
Open: 10.00-5.30 7 days a week



HALESOWEN 79 High Street
Halesowen, West Midlands
Tel: 021 501 3853
Open: 9.30-6.30 Mon-Sat



KNUTSFORD High Leigh Garden
Centre, High Leigh, Knutsford,
Cheshire. Tel:
Open: 7 days a week (OPENING SOON)



LOUGHBOROUGH The Coneries
Tel: 0509 266964
Open: 10.00-6.00 Mon-Sat
12.00-4.00 Sun. Closed Wed



SUTTON COLDFIELD Windley
Garden Centre, Lichfield Rd, Four
Oaks. Tel: 021 3081449 No Marines
Open: 10.00-6.00 7 days a week



WORCESTER 29-31 Lowesmoor
Worcester. Tel: 0906 25157
Open: 10.00-6.00 Mon-Sat



**DUE TO EXPANSION, SITES ARE
NOW CURRENTLY AVAILABLE
THROUGHOUT THE UK.**

Midland Water Life, the specialists in
aquaria and water garden retail
concession are offering new franchising

ventures to ambitious, determined
business people with available capital
to invest

**RUN YOUR OWN BUSINESS—
WITH OUR SUPPORT**

154/156 High Street, Bromsgrove
Worcestershire B61 8AR, England
Telephone: (0527) 70676

Contact:

**MIDLAND
WATER LIFE**
FRANCHISING LIMITED

COLDWATER AQUARIA/PLANTS



RECOMMENDED LIGHTING FOR COLDWATER PLANTS

(Minimum period: 12 hours/day)

Tank Size		No. of Fluorescent Tubes	Length of Tubes
Inches	Centimetres		
24x15x12	60x38x30	3x15 Watts	18in — 45cm
36x15x12	90x38x30	3x25 Watts	30in — 75cm
48x15x12	120x38x30	2x40 Watts	42in — 107cm
60x18x18	150x45x45	3x40 Watts	48in — 120cm

Acorus gramineus variegatus (Striped Rush)

From Japan, this stiff plant with its cream and green striped leaves makes an impressive contrast to other species. Grows about 8in (c 20.5cm) high underwater. Plant one plant to a pot.

Ophiopogon japonicum (Japanese Fountain Plant)

Although not totally happy submerged, this waterside plant will survive and thrive for over a year underwater. Its stiff, dark green leaves are grass-like and recurved, giving a most unusual appearance. Plant just one plant to a pot.

Armoracia aquatica (American Cress)

This extraordinary plant has many leaf forms. At its most extreme, the leaves are very finely divided, dark green in colour, and reach a height of about 9in (c 23cm). Plant just one plant to a pot.

FOREGROUND PLANTS

Lilaeopsis novae-zelandiae (Carpet Sword)

A delightful little plant from New Zealand, this species is best purchased already well established in its pot. The grass-like leaves have slightly expanded tips. It grows by runners and only reaches a height of 1½in (c 4cm).

Sagittaria pusilla (Pygmy Sagittaria)

Very similar to the above, this tiny plant also spreads quickly by runners to form a dense carpet. As with *Lilaeopsis* it is better to buy established pots.

Hydrocotyle vulgaris (Dwarf Pennywort)

An unusual little plant with thin stalks atop which sits a circular leaf, like a parasol. Rare and difficult to obtain, this little gem also increases by underground runners.

Samolus floribundus (Water Cabbage)

In fact, this plant is more akin to a Water Lettuce (*Pistia*), but this name was already taken up by the well known floating plant. This rosette-forming plant is an ideal foreground plant. It should be planted in a solid pot of gravel as, for some reason, it dislikes growing in rockwool.

Fontinalis antipyretica (Willow Moss)

This Water Moss is not really a foreground plant, but is best grown on bogwood or rocks, where it is very decorative. Attach to its intended home by means of elastic bands. After a few weeks it will attach itself by root-like organs.

FLOATING PLANT

Only one plant makes a good subject for this area of the tank. It floats just below the surface, not on it. However, it is hardy, fast growing and gives shade and protection to small fish. Its name is *Ceratophyllum demersum* or Hornwort. Closely resembling a Milfoil, it has whorls of stiffish, dark green foliage. Unlike Milfoil, however, it never produces roots.

TEMPERATURE

Indoor aquariums are very much at the mercy of the central heating system these days and will run at between 65-70°F (c 18.5-21°C) depending on the thermostat setting. This sort of range suits most goldfish very well. However, if the heating is switched off at nighttime, then it may be wise to fit an aquarium heater/thermostat, set to about 65°F (c 18.6°C) to prevent the fish becoming chilled and suffering as a result.

THE water ZOO

*Fantastic selection of inverts
and over 100 types of marine fish*

Please telephone for details of current stock

437B LINCOLN ROAD MILLFIELD PETERBOROUGH TEL 0733 312142

QUALITY KOI COMPANY
 BRIDGE END, BRIGHOUSE, W. YORKSHIRE
 Telephone: 0484 722015

WE STOCK SOME OF THE BEST KOI YOU WILL FIND IN THE UK

<p>TRADE / RETAIL MAIL ORDER</p> <p>Special Offer: Polybac £22.50 5 sachets, inc P. & P.</p>	<p>All Koi personally selected in Japan and imported direct by us. Thousands to choose from. Free delivery on orders over £100.</p> <p>GENUINE BUTYL LINERS 35p sq ft <small>INC VAT & FREE DELIVERY OVER 224 sq ft. GUARANTEED 20 YEARS NON WELOD P.G.A.</small></p> <p>OPEN DAY: SUNDAY, 1st MAY. ALL WELCOME TO OUR SPECIAL ANNUAL EVENT. <small>* 20% OFF ALL KOI PRICES FOR THE DAY * FREE KOI RAFFLE, FREE REFRESHMENTS</small></p> <p>SEND FOR FREE BROCHURE & COMPREHENSIVE PRICE LISTS <small>PROMPT ATTENTION TO ALL INQUIRES & MAIL ORDER. PERSONAL SERVICE & EXPERT ADVICE ALWAYS AVAILABLE</small></p> <p>• POND DESIGN • CONSTRUCTION • HEATING</p> <p>DIRECTIONS: Exit 25 off M62 then 1½ miles to Bridge End (opp. Star Pub) <small>Open 6 days, 10am-6pm. Closed Wednesdays.</small></p>
---	---

"NEW LOOK" ON PARADE !


Hikari



PET PRODUCTS
INTERNATIONAL LTD.

Pedigree House, Nottingham NG12 2LQ. Telephone (0602)811088

OVER A CENTURY OF EXPERIENCE

Fresher in every way!

Freshness you can see!

- Completely new, inside and out!
- The latest technology for the freshest product!
- Fresher raw materials!
- Facilities that guarantee continued freshness!

All in a redesigned package that reflects
an all new approach.



Exported by KAMIHATA FISH IND. LTD.



POND PROBLEMS?

THEN CONSULT . . .

The Pond Doctor®

For the complete range of medications and water treatments to suit any pond ask for the Pond Doctor. A range of six brand new products which give complete control of your pond.

All Pond Doctor products are available in a handy easy dose 1000 gallon take home pack and comes complete with simple instructions on diagnosis and treatment.

WHY NOT SEND FOR YOUR FREE LEAFLET TO T.A.P. BELOW.



ALGICIDE

Kills Algae effectively

CONDITIONER/TONIC

Makes every pond a healthy pond

DECHLORINATOR

Eliminates chlorine/chloramine

MEDICATION FOR BACTERIA

Effective for fin rot and ulcers

MEDICATION FOR FUNGUS

Treats a common coldwater fish disease within days

MEDICATION FOR PARASITES

Kills parasites on all pond fish, safely but effectively

TECHNICAL AQUATIC PRODUCTS, 542 FILTON AVENUE, BRISTOL BS7 0QG
TEL: 0272 692345



NEW

**K
ECONOMY
A
R
I
PELLETS**

NEW

MANUFACTURED AND PACKED IN ENGLAND

Contains Spirulina, Carotene and 5% wheatgerm

Especially blended for the English climate and dietary requirements. Feed them fresh for less.

50 KOI FOR £50

ALL IMPORTED AND QUARANTINED APPROX 3"
IDEAL FOR GROWING ON

Trade Enquires Welcome

FRANCHISES AVAILABLE IN SOME AREAS

01-534-2608 or 0836-584702

10 a.m.-7 p.m. 7 days

Visits by appointments only

KOI CENTRAL

- 3in-22in Koi always in stock at a quality and price you will find hard to beat.
- Manufacturer of quarantine systems for the Koi keeper and trade.
- Manufacturer of pond filtration systems.
- Stockists and distributor of pressure pipes and fittings.
- Pond design and construction service.
- Stockists of Koi books, nets, medication, food, solid and perforated floating Koi containers, sand filters, pumps and much, much more at our specialist indoor unit.
- Telephone 0634-827342 now for your free catalogue or pay us a visit.

You won't be disappointed! Ring for details of our exciting new April stock.

**KOI CENTRAL, 375 HIGH STREET,
ROCHESTER, KENT**

OPEN: SUMMER
10-6 pm, 7 DAYS
OPEN: WINTER
10-5 pm, CLOSED MONDAYS



Stephen H. Smith Garden Centre
Pool Road, Otley LS21 1DY, West Yorkshire
Tel: Otley (0343) 464645 Open 7 Days



**HUGE
SELECTION OF
MARGINALS
AND LILYS!!**
Common
Goldfish and
Fighting Fit
Fancys!!

Every conceivable aid to a successful pond season
for you in stock at

WATERSCAPE

**NOW STOCKING SERA AND FRITZ POND AND
TROPICAL PRODUCTS PLUS ALL MAJOR BRANDS
PLUS THE USUAL UNSURPASSED
QUALITY, SERVICE & ADVICE**

COLDWATER AQUARIA/FILTRATION

FILTERED FACTS

No tank can be dirty and healthy at the same time. A good filter will help solve most water quality problems. As David Pool of the Tetra Information Centre explains, there are several options open to the coldwater aquarist.



Above, unfiltered, overfed and overcrowded tanks will often end up cloudy and "unhealthy" such as this one housing Tench. Right, Koi, and some other coldwater species, are very good at lifting undergravel filter plates. Power filtration may therefore be a better alternative.



Most aquarists are well aware of the importance of keeping the water in their aquaria clean and pollutant-free. Failure to do so adversely affects the fish, reducing growth rates, dulling coloration, causing unnatural behaviour, and making the fish susceptible to disease. In extreme cases, poor water quality can kill both the fish and plants.

There are several ways of maintaining good water quality in the coldwater aquarium. The aquarium can be lightly stocked with fish and have dense plant growth, or the aquarist can undertake very frequent water changes. However, for most fish-keepers, good water quality is maintained using a filter. Before looking at the types of filter suitable for a coldwater aquarium I shall examine the principles of filtration.

PRINCIPLES OF FILTRATION

The basics of filtration are the same whether the filter in question is being used in a pond or an aquarium, in tropical or coldwater conditions.

There are three forms of filtration commonly adopted in filtering a coldwater aquarium.

MECHANICAL FILTRATION

In mechanical filtration the filter medium acts as a sieve to remove any particulate matter that might be present in the water.

The finer the filter medium, the more effective it will be at removing debris, but, unfortunately, the finer the medium, the more easily it becomes clogged and needs cleaning. Perhaps the best media for mechanical filtration are synthetic filter wool and foam. However, both need regular cleaning if they are to remain efficient, particularly if you keep Koi or Goldfish, both of which delight in stirring up any debris in the gravel.

BIOLOGICAL FILTRATION

A biological filter is the site where the bacteria which consume organic waste are encouraged to grow. It may surprise you to learn that the filter does not just contain bacteria. There are also numerous fungi, worms, invertebrates and algae, all of which help in breaking down the fish waste.

Before you decide to visit your local Koi-dealer, ask yourself the following questions:



- Have they been keeping Koi themselves for more than ten years?
- Do they own their own Koi pond at home?
- Are their newly imported fish treated?
- Do they have quarantine facilities?
- Have they designed, built and landscaped their premises?
- Do they use their own staff to build ponds?
- Are they members of the Federation of Master Builders?
- Is their premises indoors and heated?
- Are they open all year?

WORLD OF KOI
SPECIALIST SERVICES TO KOI KEEPERS

If you can't answer yes to all these questions, pay us a visit — WE CAN.



Rod & Steve



Mail order available



POOND
DESIGN AND
CONSTRUCTION

At BENCEWELL FARM, OAKLEY ROAD, BROMLEY, KENT
Tel: 01-462 9479

Only 6 miles from junction 4 of the M25, near Bromley Common

Open 7 days
a week
10am-6pm
Viewing
Sundays



The world's greatest selection of fish books



T.F.H. PUBLICATIONS LTD., CLIVEN HOUSE, PRIORS WAY, BRAY, MAIDENHEAD SL6 2HP. Tel: 0628 771944

COLDWATER AQUARIA/FILTRATION

However, it is the *Nitrosomonas* and *Nitrobacter* bacteria which complete the major steps in the nitrogen cycle.

In order to encourage a good growth of bacteria and other organisms it is important to provide a large surface area for them to grow on and an abundant oxygen supply. The oxygen supply comes from having a good flow of water over the filter medium. In some specially designed systems (e.g. Hockney aquaria) the water is aerated before it passes into the biological filter to ensure that it is saturated with oxygen, and to encourage bacterial growth.

The choice of filter medium has to provide the large surface area needed, but also needs to reduce the chances of blocking or preventing a good flow of oxygen-rich water. Fine gravel, sand or densely packed filterwool will all provide a massive surface area, but because they restrict the flow of water, oxygen will only reach the surface layers, with the rest of the filter being inefficient. Much thought has gone into the design of suitable media to ensure efficient biological activity, and the aquarist can choose from a wide range including filter wool, foam media, synthetic rings and nylon mops.

One problem with biological filtration in a coldwater aquarium is that the filter bacteria are greatly affected by water temperature. As a general rule, as the temperature increases (within limits) the bacteria become more active, and so, more effective at decomposing any organic waste products. Fortunately, at low temperatures the bacteria can adapt to lower water temperatures, providing they do not fluctuate too widely. In addition, water at lower temperatures can hold more oxygen. Therefore, more of the filter will receive sufficient oxygen for

the bacteria to function. Finally, ammonia is less of a problem at low temperatures.

The first stage in the decomposition of organic waste is the production of toxic ammonia or non-toxic ammonium. The relative amounts of each depend on a number of factors, one of which is temperature. In fact, the lower the temperature the smaller the amount of ammonia produced, therefore, the fish waste is less toxic.

Adding everything together, this means that a bacterial filter will still work, providing the temperature is above 7-8°C (44.5-46.5°F). Below this temperature the bacteria do not function very efficiently, but the fish are also much less active and less inclined to feed. At these low temperatures it is obviously very important to avoid overfeeding, as the bacteria will not be able to decompose the excess.

CHEMICAL FILTRATION

Chemical media can be used in a filter to remove certain harmful compounds. Popular media for the aquarium include zeolite and active charcoal. If used, chemical media should be placed in a box filter, after the biological filter. In this position it will mop up any pollutants not consumed by the bacteria. If placed in front of the biological filter the chemicals will remove the food source of the bacteria.

In a well-managed, established aquarium, chemical filtration should not be required, as the biological filtration, together with regular partial water changes, should maintain perfect water quality. However, if the tank is overstocked, overfed, new fish are added or the bacteria are less efficient for some reason (e.g. blocked or recently set up) the chemical media will help to prevent a potentially lethal build-up of toxic pollutants.

Chemical media work by actively absorb-

ing certain chemicals from the water. As you might expect, there is a limited number of sites where this absorption can occur, and so, eventually, the chemical media will become exhausted. This may take from a few days to several months, depending on the quantities of pollutants in the water. Chemical media in a polluted aquarium, or one that has just had a remedy added, will rapidly become exhausted, whereas in a well maintained aquarium with a good biological filter, they will last much longer. Once exhausted, the chemical filter will simply act as a surface for bacteria to grow on. Regular monitoring of the ammonia and nitrite levels using a good quality test kit will show a slight rise in concentration when the media become exhausted and need replenishing.

Zeolite can be re-activated by placing it in a concentrated salt solution for 1-2 days and then carefully rinsing in freshwater before replacing in the filter. Charcoal can be partially re-activated by heating to 300°F (c 150°C) in an oven. The re-activated charcoal is not as effective as new media and should only be re-treated once.

TYPES OF FILTER

Having examined the methods of filtration for the coldwater aquarium, I'd like now to examine the different types of filter available, and their suitability for different fish.

UNDERGRAVEL FILTRATION

Undergravel filtration uses the gravel in the aquarium as a filter medium, with water being drawn through it by an air or mechanical pump. The large area of gravel is much greater than can reasonably be achieved with any other type of filter, making undergravel filtration a good choice in some circumstances.

This is certainly the case if you intend to keep non-digging varieties of coldwater fish, such as Orfe, Rudd, Sunfish etc. However, for Goldfish, Koi and Tench an undergravel filter is less suitable because these fish all tend to dig in the gravel searching for food. This constant disturbance of the filter medium can result in the water becoming clouded by particles of debris. In extreme cases the filter plate will become exposed, so short-circuiting the filter. If you have an undergravel filter, or are considering installing one in a coldwater aquarium, make sure that you have a good depth of gravel, and ensure that it is well maintained.

Undergravel filter maintenance is a simple procedure that should be combined with the bi-weekly partial water change. Any accumulated debris in the aquarium should be removed and the gravel carefully cleaned by stirring and siphoning off the debris, or, far better, by using a gravel cleaner such as the Tetra Hydro-Clean. By removing the debris, the gravel will not become blocked and there will be nothing for the fish to disturb. Occasionally, it is also advisable to



Polyfoam filters are particularly useful in tanks housing fry.

COLDWATER AQUARIA/FILTRATION

place the siphon tube down the filter uplift tube to remove debris from under the undergravel plate.

BOX FILTRATION

A box filter is simply a container filled with a medium and with a mechanical or air pump to circulate the water.

Mechanically driven filters are by far the most popular and can be placed internally or externally, depending on the design. The choice between an internal or external filter is largely a personal one, but is influenced by aquarium size, space available and internal aquarium decor.

The great advantage of a box filter is that a number of different media can be used at the same time. The media can also be altered as required. In this way the aquarist can have mechanical, biological and chemical filtration within the same filter. It is advisable to arrange the media in the above order. This allows the mechanical filtration to remove most of the large debris which would otherwise block up the finer biological filter. The chemical media should be placed last to mop up any excess ammonia and nitrite.

The rate at which the water passes through the filter is important. In a coldwater aquarium the water should pass through the filter once every hour. In this way the

bacteria will receive sufficient oxygen to function efficiently and the water will be kept clean.

Gradually, the filter medium will become clogged, so reducing the rate at which water can flow through the filter and, therefore, its efficiency. To prevent this occurring, the filter should be periodically cleaned. It is advisable to clean the media at two-weekly or monthly intervals, depending on the stocking rate. The mechanical and chemical media can be rinsed under a cold tap to remove any traces of debris. The biological filter medium should be rinsed in aquarium water that has just been removed. The aim here is to remove the debris but not to dislodge or kill the bacteria. If the biological medium is rinsed in hot or cold water, or in water containing chlorine, many of the bacteria will be killed, resulting in problems associated with ammonia and nitrite build-up. With mechanically driven filters, it is also advisable to clean the impeller and pipes occasionally.

POLYFOAM FILTERS

Polyfoam filters, are ideal for smaller coldwater aquaria. They are powered by an air pump which draws water through the special foam. The foam acts both mechanically and biologically to maintain good water quality.

These filters are particularly useful if you intend to breed any coldwater fish. The fry are weak swimmers and can easily get sucked into a powerful box filter, but with a polyfoam filter, this is not a problem.

One great advantage of the polyfoam filter is the ease of maintenance. It is a simple and quick operation to remove the foam and rinse it in discarded aquarium water — remember, to avoid killing the bacteria.

OTHER TANK MAINTENANCE

Even with adequate filtration, it is still very important to undertake regular partial water changes in order to maintain good water quality and, therefore, healthy fish. When the filter is functioning efficiently, it will convert fish waste into nitrate (through ammonia and nitrite). This nitrate can be used by plants and algae as a food source, but in most aquaria, there are too few plants to prevent the concentration slowly rising. Raised nitrate levels may adversely affect the growth, behaviour, coloration and disease resistance of the fish.

By changing 25-30% of the water every 2 weeks (or more frequently), and at the same time servicing the filter and removing excess debris from the gravel, the nitrate level can be kept at a low level. Your fish will certainly benefit from this small effort.

PONDS · PLANTS · FISH FOUNTAINS · AQUARIUMS

PONDS & LINERS

Top quality butyl rubber liners, guaranteed for 25 years. Heavy duty green PVC and economical laminated PVC liners. Comprehensive range of sizes in stock. Any size fabricated to order. Glassfibre ponds up to 24ins deep.

POND PLANTS

Enormous selection of water lilies, marginals, floaters and oxygenators in season, many ready-planted to go straight into your pond.

POND FISH

Goldfish, Shubunkins, Orfe, Fantails, Koi, Tench, Higo, Sarasa Comets and Fantails, Ghost Koi, Rudd and others, including top quality English-bred fish for discerning pond keepers.

FOUNTAINS & WATERFALLS

Pumps for every purpose — and plenty of technical expertise at your service. Trade in your old pump for 10% discount on any new submersible.

FREE SPECIALIST ADVICE on
all pond and aquarium subjects

20% DISCOUNT
ON ALL POND
LINERS



Wildwoods

WATER GARDEN CENTRE

THEOBALDS PARK ROAD · CREWS HILL · ENFIELD · MIDDX · EN2 9BP TEL: 01-366 0243

Open 7 days a week 9 to 5.30 inc. Bank Holidays (Late Opening Friday 7pm April-Sept)

South of M25 between
Junctions 24 & 25
1/2 mile south of
Crews Hill Station

Introducing . . .

SUMI SEI BRAND

SHUSUI

**HIGH PROTEIN
FLOATING**

**SUPERIOR QUALITY
PELLETS**

Japanese Style Koi Food:

SHUSUI ORIGINAL complete diet

SHUSUI AMBER with wheatgerm

SHUSUI RUBY colour enhancing

Japanese style pellets
English style prices

	300gm	500gm	2.5K	5K
SHUSUI	£1.80	£2.80	£9.00	£15.95
AMBER	£1.80	£2.80	£9.00	£15.95
RUBY	£1.90	£2.99	£9.49	£16.49

星 翠 和 人 星

Distributed in the UK by Underworld Products of Loughborough.

Getting bigger Getting better

Valley
AQUATICS

Open daily from
10.00 am till
6.00 pm, 7 days
a week

If your interest is Japanese Koi Carp or in fact any aspect of fishkeeping then you should visit our centre in Haslingden, Lancashire.

We are the largest stockholders of Japanese Koi in Britain with never less than 25,000 fish on view, ranging in size from 3 ins. to 24 ins. Our extensive site includes 2 large ponds, a covered stock pond, a showroom with Koi tanks, 40 tropical tanks, seating and refreshment area plus an outside 150,000 gallon lake stocked with thousands of superb fish. It is also possible to see our quarantined growing area through special viewing windows. All of our water is continuously filtered providing ¼ million gallons of crystal clear water in which to view our superb range of fish.

In addition to our fish stocks we provide a complete service for the fishkeeper (both cold water and tropical) with everything you need from digging a hole in your garden to stocking a small lake or installing an inside aquarium.

Plantation House, Flip Road,
Haslingden, Lancashire BB4 5EJ.
Tel: Rossendale (0706) 228960/224370

flocor MAIN STOCKIST

THE water ZOO

REPTILES, AMPHIBIANS
and everything aquatic!

4378 LINCOLN ROAD, MILLFIELD, PETERBOROUGH TEL 0733 312142

H. TISBURY & SONS

SPICE PITTS FARM, CHURCH ROAD,
NOAK HILL, ROMFORD, ESSEX RM4 1LD.
Tel: Ingrebourne (04023) 41376

**FOR QUALITY
FISH, PLANTS, ADVICE**

OVER 50 YEARS' EXPERIENCE BREEDING
QUALITY POND AND AQUARIUM FISH

SUMMER OPENING HOURS March 1st to October 31st
10 a.m. - 6 p.m. Daily. S.A.E. for all enquiries.

WATER TESTING — NEW TECHNOLOGY PUTS YOU IN CONTROL



At New Technology we take no chances. As our name implies we use the latest technology to develop and produce this superb range of water quality testing kits for marine and freshwater aquariums and ponds. Accuracy over the specific ranges is key to the good health of your fish — our reputation depends upon it.

Ask for New Technology Water Quality Test Kits at your local stockist.

Or for more information send for our new product guide. It gives details of the complete range of New Technology products — all designed to help you keep your fish in peak condition.

Simply complete the coupon and return to:



NT Laboratories Ltd,
Unit 13, Branbridges Industrial Estate,
East Peckham, Tonbridge, Kent TN12 5HF
Telephone: 0622 871387



Please send me your free product guide

Name _____

Address _____

Tel. _____

TKA



GOLDFISH KEEPING — AFTER THE BASICS

Where does basic goldfish-keeping end, and where does more advanced involvement begin? **Stephen Smith** has some views on the subject.

Q uite sensibly, the beginner to Goldfish keeping is always advised to commence with varieties which are hardy and easy to keep, such as the Common Goldfish, Fantail, Comet, or Shubunkin.

The reason for this is straightforward: disappointment can kill any interest in anything. Thus, going "in at the deep end" with Moors, Lionheads, Pompons, and so on, can sometimes lead to disappointment and subsequent abandonment of a hobby which can produce so much reward, given a little forethought.

There really is no substitute for experience. Having come to terms with the basic rules of fishkeeping, the hobbyist will have gained a great deal of pleasure — and not a little confidence — from "this pleasurable pursuit".

But where does "advanced Goldfish-keeping" begin?

Frankly, even the most experienced keepers of Goldfish would admit that they are still learning — and some I know have been involved with the species for virtually the whole of their lives!

I have often stated that there is no mystery in keeping Goldfish — or any other aquatic pursuit for that matter. Basically,

everything boils down to commonsense; and we all know how "common" that is!

However, having gained the confidence and experience of keeping some of the harder varieties, there is no reason at all to hold back the hobbyist from becoming an enthusiast.

Few can resist that exciting and challenging world of flowing caudals, telescope eyes, hood development, selective breeding, spawning, growing on, and on, and on, and ...

So we'll skip the "setting up the aquarium" and other "how to" sections because we've done all that, haven't we?

If not, DO NOT read on. It is imperative that, if you have just decided to buy your first fish, you find out as much as you can about keeping fish BEFORE you buy them.

However, you've gone this far, so you may as well find out just what you are letting yourself in for!

Specialise

So, you have a couple of aquariums in the living room, but you want to keep a selection of fancies which you've seen at a local show or breeding establishment.

My first advice would be: specialise, especially if you hope, or intend, to breed.

Too many fishkeepers attempt to keep

too many fish in too little space. Goldfish need room to thrive and thus reach their full potential of development. In a three-foot tank, for example, I would recommend that only three or four goldfish are kept. The surface area of the water is the most important factor, as this will determine the rate of exchange of carbon dioxide and oxygen between the water and the air.

The volume of water, of course, is also of importance.

Goldfish are really one of the dirtiest species to keep. Both solid AND liquid matter is excreted by healthy fish to contribute to gradual deterioration in water quality.

But you knew all this already ... So, to return to my initial point, you will derive more enjoyment by keeping a few varieties in a lot of space, than by trying to cram all the varieties into limited accommodation.

Enjoyment is important

Obviously, you will wish to have more than the couple of tanks presently set up in the living-room. Half-a-dozen in the garage sounds like bliss, doesn't it? How does two dozen sound?

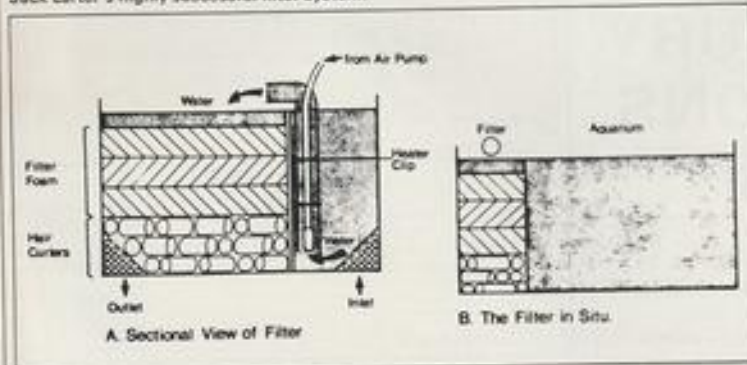
Great, until you realise that to undertake weekly water changes and general tank maintenance is going to take you so much time you'll never get the chance to sit back and enjoy your fish, let alone become involved in breeding and rearing them, culturing live foods, and showing.

So, whether you are hoping to extend your hobby into pondkeeping or indoor aquaria, or both, do remember to plan as much time as possible for sitting back and enjoying it.

Bare tanks

A great majority of goldfish enthusiasts keep their wards in tanks which are completely void of plants or gravel. This makes cleaning a great deal easier — any muck can be spotted easily and immediately siphoned away. Algae are tolerated. In fact

Jack Larter's highly successful filter system.



Designed Purely For Koi!

Shikoku

SIZE: 16' x 9' DEPTH: 48"
CAPACITY: 2000 GALLONS



FROM THE 'ISLAND RANGE'
THE MODERN CONCEPT IN PONDS!

FEATURING:

- * INBUILT STRENGTH
- * 'THEME' SHAPES
- * SENSIBLE DEPTHS
- * QUALITY CRAFTSMANSHIP
- * BUILT BY HAND
- * REINFORCED PANELS & SLOPING BOTTOMS
FOR EASY FILTRATION ADAPTION

Illustrated are 4 Deepools ponds designed specifically for the needs of Koi enthusiasts.

The Island Range also includes:

'GRAN CANARIA': Size 10 x 9, Depth 36", Capacity 720 Gallons
'LANZAROTE': Size 13 x 7, Depth 24", Capacity 357 Gallons
'TENERIFE': Size 12.5 x 8, Depth 26", Capacity 365 Gallons
'IBIZA': Size 15 x 8, Depth 28", Capacity 595 Gallons

Kyushu

SIZE: 12.5' x 9' DEPTH: 40"
CAPACITY: 850 GALLONS



Lanzarote

SIZE: 13' x 7' DEPTH: 24"
CAPACITY: 357 GALLONS

SPECIAL PRE-SEASON OFFERS

Deposit received by
1st week in April
gets your ponds
at '86 prices



Gran Canaria

SIZE: 10' x 9' DEPTH: 36"
CAPACITY: 720 GALLONS



CONTACT: OFFICE HOURS 9 a.m. to 9 p.m.
UNIT 1A, ROSEVEAR ROAD, BUGLE, ST.AUSTELL,
CORNWALL, PL26 8PH
TELEPHONE (0726) 63939 (24 Hours)

WEST DEVON AQUATICS

NO. 2, ENDSLEIGH GARDEN CENTRE,
IVYBRIDGE, DEVON.

For the full range of pumps, pool liners
and ponds.

Good selection of ornamental fountains.
Many tropical and coldwater fish
always in stock.

TELEPHONE: 0752 892254

CASCADE WATER GARDENS

- Coldwater Fish Now in Stock
- Magnets & Lites for your pond
- Discounts on selected Pools and Pumps
- Keep your pond clear with a Cascade Pond Filter

FOR ALL YOUR AQUATIC NEEDS
PAY US A VISIT -
CASCADE WATER GARDENS
ALL IN ONE GARDEN CENTRE
ROCHDALE ROAD, MIDDLETON
INVEST IN A LIFETIME OF PLEASURE.
TELEPHONE: ROCHDALE 31677

STOP!
If you're building
a pool this year -
get it right first
time with friendly
helpful advice
from our staff

BUTYL POND LINERS

PLEASE NOTE, WE ONLY STOCK TOP QUALITY SWEDISH BUTYL

- ★ 20 year guarantee
- ★ Any size available
- ★ Free delivery on all orders over £75.00 (if under, please add £2.95 towards p&p)

ONLY .44p sq ft inc VAT

PVC LINERS

(Colours: Black, Blue, Stone)

- ★ 5 year guarantee
- ★ 20p sq ft inc VAT

HEAVY DUTY PVC LINERS

- ★ Dark green
- ★ 10 year guarantee
- ★ 30p sq ft inc VAT

All orders under £75 please add £2.95 towards p&p

GREEN WATER? U.V. POND CLEAR UNITS

From £77.00 (1500 gallon)

Phone for details



DISCOUNT POND PUMPS

Nova Dab Range	
2 year guarantee	£75.00
Nova 200	
1800gph	£87.50
Nova 300	
Automatic	£128.00
Nova 600	
2,500gph	

All prices include VAT, postage and insurance



MARINE SECTION (including 600 gallon showtank)

MARINES:

The finest selection of really healthy marines anywhere!

TUNZE:

The best in filtration at the lowest prices!

NITRAGON:

Removes 90% of nitrates from tap-water, a must for the Marine or Discus keeper
ONLY £41.72 inc p&p.
Trade enquiries welcome.

SEABRAY:

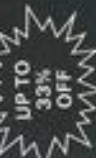
Systemised aquariums in stock

EHEIM:

Up to 35% discount (callers only)

TROPICALS & COLDWATER:

Massive selection of healthy fish and plants always available!



For any information you require on the advertised products or stock please do not hesitate to telephone us.

Wetpets of Romford

71 VICTORIA ROAD, ROMFORD, ESSEX.

3 mins from Romford Station

Telephone: (0708) 44880

CREDIT FACILITIES AVAILABLE



We'll worth a visit by customers new and old just to see our 500-gallon invertebrate system.

Open Monday to Friday 10am-6 pm.
Saturday 9.30am-6.30pm

COLDWATER AQUARIA/GOLDFISH

it is felt that they are an aid to water quality. Normally, algae are only cleaned off the front glass so that the fishkeeper can view the fish easily.

Thus, on the whole, the Goldfish enthusiast tends to be more of a FISH-KEEPER than an AQUARIST.

There are exceptions, of course, but the main objective of the Goldfish enthusiast is, arguably, to produce or keep better fish, and the easier the environment is to maintain, the greater are the chances of success.

Filtration and heating

Water quality is of the utmost importance. Just as Koi enthusiasts prefer to keep their fish in gin-clear ponds, so the Goldfish enthusiast requires that his/her fish enjoy the most clinical of conditions.

"Cleanliness is next to Godliness" is the golden rule familiar to all enthusiasts. Despite the claims of AQUARISTS for balanced environment, Fancy Goldfish will be healthier, hardier, and in better condition, when kept in the cleanest of conditions, with the closest attention paid towards aquarium husbandry.

Despite the aversion of many for gravel, there are, however, a number of Goldfish keepers who favour undergravel filters for their aquaria. It has, however, been suggested that these do not function so well in coldwater as they are designed for use in tropical systems.

I have used undergravel filters in a number of my own aquaria for several years and they have proven more than adequate. Again, I feel that many problems can be avoided by not overcrowding.

My preferred method of filtration is to filter each aquarium individually, using an internal power filter. Regular cleaning of the cartridge or filter medium is essential for the filter to function properly, and this is taken care of during the maintenance routine.

A great deal of interest has been received from details of the internal filter system devised by Jack Larter, and featured in

"Coldwater Jottings" in June 1986. This has proven highly effective and is easily constructed by following the accompanying diagram.

I would not advise the use of a filter system which serves all the aquaria simultaneously. Any disease or parasites can quickly be spread throughout the whole system and devastate your stock. Far better for each tank to be individually filtered to isolate any outbreaks of illness.

Heating is not really necessary for Fancy Goldfish. If your fish-room is a spare bedroom or garage, temperatures will remain fairly stable — especially if the house is centrally heated. In which case, do site your aquariums away from radiators or, better still, turn off those in the fish-room.

Except in the worst of winters the ambient heat in the house will be sufficient for the fish. After all, they are COLDwater fish, not suited to being poached!

Even Fancy Goldfish overwintered outdoors can withstand the harshest of conditions, given that simple precautions such as pond-cleaning and simple husbandry are carried out.

Moderate heating, especially in outdoor fish-houses, can be beneficial to the fish, but don't forget that even fish, especially those intended for spawning, need to have something of a "dormant" period over the winter.

Quarantine

In addition to the half-dozen or so tanks which you may intend for keeping your favourite specimens, provision must be made for, at least, two further tanks: a hospital tank and an aquarium for quarantining newly-acquired fish.

Taking the second example first, every fish you obtain MUST receive a period of quarantine before it joins the rest of your

Champion specimens of Fancy Goldfish such as this giant Oranda, photographed in Singapore, are usually raised and exhibited in bare tanks.



stock.

I tend to quarantine any acquisition (and I try to limit these as far as possible) for, at least, eight weeks to ensure that no parasites or infections are present.

Neglect of quarantine procedures can lead to a complete wipe-out of your establishment.

So, make sure that you adhere rigidly to the philosophy that the stock you already have is far more valuable to you than any newcomer.

Turning to the hospital tank, a similar philosophy is often better in the long term. Isolate a sick fish immediately to reduce any risk to your remaining stock and to enable the fish to recover in peace.

The tank should be set up permanently with aged water and a very slow airstone. I would not recommend the use of any supplementary heating.

It is advisable that the hospital tank is situated in the most easily accessible position and not tucked away in a corner.

A sick fish will need plenty of TLC (Tender Loving Care) so constant monitoring is essential. As for treatments, the advanced hobbyist tends to steer clear, if they are not essential, relying on the experience that it is often better to leave things alone. Far too many fish are killed with the "kindness" of a cocktail of treatments which only serve to hasten the demise of the patient.

Mind what you buy

Having set up your garage/spare room/out-house/shed/greenhouse with any number of tanks for the accommodation of your favourite variety or varieties of Fancy Goldfish, pay careful attention to the selection of fish.

Only buy from a reputable retailer whose stock is clean and whose conditions are as good as, if not better than, those you would aspire to.

Alternatively, buy your fish from a breeder of British Goldfish. Some of these also import the more unusual varieties. There are also a number of societies around the country which specialise in Goldfish and a great deal of information is available from members, in addition to some fine quality specimens.

What next?

Sit back and enjoy. Although it must be admitted that a great deal of dedication can be involved in keeping Fancy Goldfish, the main purpose of any hobby is to enjoy it. Have fun first and foremost.

Don't forget everything you learned with your first Common Goldfish. By now you will definitely have been bitten. If you aren't already, before long you will be breeding, rearing and showing your fish, and building a yet bigger pond and/or fish-house.

But, these are the subjects of separate articles — and we haven't even mentioned the fish themselves!

ALLPETS (STANMORE)

Water Garden

Ponds ● Plants ● Fish

Everything for your water garden. Pumps, liners, fibreglass ponds, filters, ornaments and Henri self-contained ornaments.

Re-potted pond plants, marginals and lilies, just place them in your pond and watch them grow.

Goldfish, Koi, Orfe, Rudd, Tench, etc.

English bred quality fish combined with professional service and advice.



ALLPETS (Stanmore) LTD.

Kiln Nurseries & Garden Centre,
Common Road, Stanmore, Middlesex
HA7 3JF. Tel: 01-954 0008

Opening Times: Tues-Sat 9am-5pm. Sun 10am-5pm.
Closed Mondays except Bank Holidays. Open every Bank Holiday.



Cyprio Ltd. 133 Eastgate, Deeping St. James, Peterborough.
Telephone: (0778) 344502.

Spring Cleaning Your Pond?

DON'T BE A SUCKER! BUY A CYPRIO POND VACUUMING SYSTEM

Introducing the Cyprio Minivac

The simplest, cheapest, most effective system on the market.

- * No pump required. 1/2in hose connection to mains water (or 1 1/2in connection to Dab 200/300 or similar pumps).
- * 1.3/2.4M Section PVC Pole & vac head.
- * Large capacity durable vacuum bag catches silt, weed, gravel, etc.
- * Flexible head - follows pond contours.
- * Suits ponds to 2,500 gals.

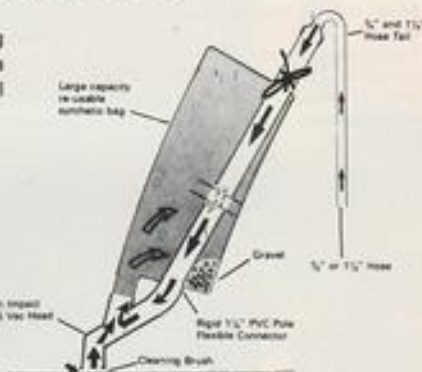
ONLY £29.50

Hose packs:
1/2in dia - 5M £7.50, 10M £14.00
1 1/2in dia - 5M £10.00, 10M £19.00

Five complete pond vacuuming packages, plus Dab Nova vacuum adaptors to suit all pond sizes:

- Minivac
- Dab Vac Kit - £97.50
- Ezeovac Kit - £205.00
- Ecomovac Kit - £250.00
- De-Luxe Vac Kit - £335.00
- Dab Base Adaptors - £20.00

Send s.a.e. for separate pond vacuum leaflets.



NOW AVAILABLE — 40 page 1988 catalogue featuring full range of products, plus new 'Guaranteed Performance Filters', weatherproof UV sterilisers and specialist section on 'Filtration Theory' and 'Identification and Treatment of Fish Disease'.



Send £2.50 for your copy now, or send SAE for 4 page leaflet on our Standard Range filters and pumps for ponds from 200-4,000 gallons.



**SWINBROOK ROAD
NURSERIES LTD**

2 SWINBROOK ROAD, CATERTON, OXON OX8 3DS
TELEPHONE: 0993 844412

Quality Tropical fish and plants always available.
Advice for beginners freely given.

Now Open
A LARGE COLDWATER SECTION
CONTAINING ALL SIZES OF JAPANESE
KOI.

**TAS VALLEY KOI
AND EXOTICS**



Unit 17,
Tharston
Industrial Est.
Long Stratton
Norwich
Norfolk
Tel: 0508
31611



**THE COLDWATER SEASON IS
NOW UNDERWAY!**

Thousands of fish in stock including: Goldfish,
Shubunkins, Orfe and our speciality Japanese Koi.
Tropical fish room now fully stocked with over 150
species.

Superb range of plants plus aquariums and
accessories.

The reptile room with over 100 vivaria and a 400
cubic foot display unit.

Over 100 species of reptiles in stock including
snakes, lizards, frogs, turtles, tarantulas, etc.
All live and frozen foods available and heating
accessories, etc

Open 10am-5.30pm daily, including bank holidays
Free car parking.

**FOR SOMETHING
COMPLETELY
DIFFERENT IN
COLDWATER FISH**

There is lots on display at:

**FISHES
GALORE**

Free Church Passage,
St Ives, Cambridge.
Tel: 68809



**Aquarist and Pondkeeper
Magazine**

Please send your advertising copy to:

***Aquarist & Pondkeeper
Buckley Press Ltd.
58 Fleet Street
(entrance 3 Pleydell Street)
London EC4Y 1JU***

To book your classified ad please ring:

Hazel Payne 01-353 4881

CLASSIFIED

TO ADVERTISE HERE: RING HAZEL PAYNE ON 01-353 4551

Coldwater

SHIRLEY AQUATICS

Extensive range of freshwater and marine equipment. Also thousands of freshwater and marines permanently in stock.

**MAJOR STOCKISTS OF
CLEARSEAL, MINIREEF AND
HOCKNEY AQUARIUMS.
COMPLETE RANGE OF SEA
TEST KITS, TETRA.
TUNZE WATER KITS IN STOCK.**

Open Daily 9-6pm.
Monday to Friday 9-8pm

1355 Stratford Road,
Monkspath, Shirley, Solihull,
West Midlands.
Telephone: 021 744 1300

Koi Sized from 4in to 28in

We invite you to visit the Country's oldest established full time retailer dealing in nothing but Japanese Koi and Koi related items. No other pond fish are stocked, but at the time of going to Press we have Koi priced from £5.90 to £1,950. All our Koi are kept in outside individually filtered ponds in a natural garden setting. We believe our stock of Koi from 10in upwards to be one of Britain's largest and our range of smaller Koi is extensive. We also stock a comprehensive range of Koi accessories including: Medicaments, Zudis, Refresh, Nets, Baskets, Pumps, Mikari Ponds and Taira Test Kits. Escalator and Butyl liners to order at competitive prices - Butyl 35p per sq ft. Advice on pond and filter construction freely given. A fact sheet detailing the construction of U/V filter-houses together with a comprehensive price list detailing all fish and dry goods is available upon request - SEE PAGE 45 & VISIT.

AVENUE FISHERIES

19 The Avenue
Sandy, Beds
SG19 1ER
Tel:
(0767) 80728



**SUMMER
OPENING HOURS**
March 1st-Oct 31st
Open 6 days a week
9am to 5.30pm
**CLOSED ALL DAY
WEDNESDAY**



SUSSEX AQUATIC SERVICES

SPECIALISTS IN JAPANESE KOI & ORNAMENTAL COLDWATER FISH
Sussex Country Gardens, Newhaven Road, Kingson, Nv, Lewes, East Sussex BN7 3NE
Telephone: Lewes 02730 477620

Koi from 3-28in, all Japanese

Full range of aquatic accessories in stock

- Biological filters
- Polykac
- Fountains and Cascades
- Perlag
- Refresh
- Pumps
- Filter brushes Bio-dia
- Zudis
- G.R.P. Ponds
- Open cell foam
- Medications
- P.V.C. Butyl Pond Liners
- U.V. Sterilisers
- Japanese ornaments

Open 7 days a week

Mon-Sat 9-5.30, Sun 10-5



GERMAN TANK BRED DISCUS NOW IN STOCK

Everything from the popular to the unusual. 100 tanks of tropical and coldwater fish all fully quarantined, plus full range of pond fish outside.

Extensive range of aquarium and pond plants, ponds, liners, and accessories.

Friendly, helpful service given at all times.
Open Mon to Sat 9am to 5pm. Sun 10am-4.30pm

**LARGE FREE CAR PARK
NEAR ROCKINGHAM CASTLE
291 ROCKINGHAM ROAD,
CORBY, NORTHANTS
TEL: (0536) 62078/203092**

LAKELAND KOI ● THE KOI SPECIALISTS

Hampell Rd, Grange-over-Sands, Cumbria
Telephone: 04484 2971



- Koi carp from 2in-24in
 - Tropical fish 1400 varieties
 - Pumps, ponds, aquariums
- And all accessories



TIMPERLEY AQUATICS & WATER GARDEN CENTRE

190 Stockport Road, Timperley Village,
Altrincham, Cheshire WA15
Telephone: 061-904 0724

Over 150 Tropical, Marine and Coldwater aquariums.
Visit aquatic accessories section and showroom. Pools, pond liners, cut to size, pumps, pond lighting, pond ornaments, in fact everything for the garden pool.

We have a water garden with thousands of pond fish and plants, all oxygenated, etc.

Many summer season offers now available.

Aquarium and pool maintenance work undertaken.

Open 7 days a week, Monday to Saturday 9.30-6.

Late night Thursday until 9pm.

Sunday 10.30-6pm. Open all bank holidays.

INSTANT CREDIT FACILITIES AVAILABLE

WRITTEN DETAILS UPON REQUEST

MARINES
COMING SOON**Fish and Things**199/205 LENTHALL AV
GRAYS, ESSEX**TROPICAL FISH AND PLANTS**POND PUMPS, SOME POND
LINES IN STOCK NOW, OTHERS
TO ORDERTanks and cabinets
made to your
requirementsPhone us for a
competitive quote
Grays: 371064Open: Mon-Sat 9.30-6
Sunday: 10.30-4pm

KOI IN STOCK NOW!

**ALL YOUR COLDWATER NEEDS
HELPFUL ADVICE GIVEN FREELY****ONLY THE FINEST
QUALITY DISCUS**Leading line breeders from the best stock available.
Sole U.K. distributors of Jack Wattley's Turquoise
Discus, Hi Fins, Solids, Brilliant Turquoise, Cobalts,
Turquoise/Red, Striped Turquoise.Send large SAE for details of latest prices. New
trade terms available. Stockists of the incredible
WET/DRY FILTRATION SYSTEM, nitrogen filter,
pH and T.D.S. meters, specialist books and accessories.**KOI** Highest quality Koi of all sizes
— 4in to 24in — only the best.Specialists in the finest small/medium size Koi.
All fully quarantined, in the finest health and at
prices you will like.RETAILERS: do not miss out — you find the quality
you want at the right price — high grade, extra high
grade and show standard.Now introducing the line that had the crowds
flocking to us at the BAND '88 SHOW — our own
English bred Koi — from the best Japanese
breeding stock.**The British Discus
and Koi Company**Unit 1B, Whitebridge Industrial Estate, Stone,
Staffs ST15 8LQ Tel: 0785 813089
Open Mon-Fri 1pm-8pm. Sat/Sun 10am-8pm
(Including all Easter)**PISCIS
AQUATICS**BARNHAM GARDEN
CENTRE, YAPTON RD,
BARNHAM, W. SUSSEXNew coldwater selection now open.
Large range of fish and plants.
Pond pumps and liners at discount prices.
Stockists of oasis and interlog.STOCKISTS OF TAHITI AND MARINA
FULL RANGE OF ATLANTIS PRODUCTSTel: (0245)
553642

Open 7 days a week

**THE AQUARIUM CENTRE**87 HARPUR STREET, BEDFORD
TEL: 0234 44163Now in stock for the coldwater season.
Full range of all the equipment you could
possibly need including ponds, pumps and
coldwater fish.**IF YOU'RE A FISHKEEPING ENTHUSIAST
WE'VE GOT SOMETHING FOR YOU!****JUST OPENED****SWINDON
AQUATIC
SUPPLIES**
-Wholesale-

CASH & CARRY

SPECIALIST IMPORTERS FROM SOUTH AMERICA,
AFRICA AND SINGAPORE

WITH REGULAR SHIPMENTS WEEKLY

OPENING TIMES MON 11.00-3.00

TUE-FRI 11.00-6.00

Send for full fish and plant list to:

UNIT 8, AXIS INDUSTRIAL ESTATE, SWINDON,

WILTSHIRE SN5 7YS.

TELEPHONE (0793) 512076

Strictly trade only

**CASH & 10% DISCOUNT
CARRY OFF FISH**

CLASSIFIED

TO ADVERTISE HERE: RING HAZEL PAYNE ON 01-353 4651

Coldwater

GERMAN BRED DISCUS

(New in stock)

From 1½in to 5in high fin turquoise/red, turquoise/red, turquoise, red, Schoulton, Schmidt Focke, Cobalts. Many more available. New stock arriving weekly.

Also wild caught Heckels, Blues, Royal Blues.

NOT FORGETTING OUR EXCELLENT RANGE OF TROPICAL AND COLDWATER FISH AND PLANTS.



NAUTILUS AQUATICS

Spring Green Nurseries,
Pontefract Road, Crofton,
Wakefield, West Yorkshire

OPEN 10AM TO 5.30PM DAILY
COME IN AND SEE FOR YOURSELF
OR CALL DAVE OR ROGER ON
0924 864779

Excellent range of top quality marine fish and inverts, sources include: Indonesia, Sri Lanka, Caribbean, Australia and the Red Sea (limited) in stock at going to print.

ANGELS

Majestic, Imperator, Trimaculatus, French, Queen, Passer, Blue Face, Rock Beauty, Koran.

DWARF ANGELS

Bicolor, Herald, Lemon Peel, Midnight, Coral Beauty, Ebelli, Tibicens, Acanthops, plus: Butterflies, Tangs, Wrasse, Wimples, Gobies, Clowns, Damsels and Sweet Lips in many varieties.

LILLIPUTT

AQUARIUM (BOLTON) LTD

170 Chorley Old Road, Bolton BLR 3BA

We are importers of all tropical fish and plants with a superb marine selection, Coldwater fish directly imported from Israel.

Open Monday to Saturday 9.30-5.30pm. Sunday 11-4.30pm

TELEPHONE: 0204 407631



HUGGLESCOTE AQUATICS

Tropical, Coldwater, Marine, Reptiles and Exotic Fish. We have the largest stock of reptiles in Leicestershire. All food and equipment, eg. Mealworms, Crickets and Locusts.

All glass aquariums at unbeatable prices: 36 x 15 x 12 at £11.25, 48 x 15 x 12 at £14.85, 72 x 24 x 24 at £39.95. All carry a 7 year guarantee.

P.V.C. and Butyl liners. Door to door delivery nationwide, 10 year guarantee on P.V.C. and 20 year guarantee on butyl.

Any size at unbeatable prices.

5000 gallon outdoor coldwater system.

Fully stocked with coldwater fish.

Top quality 3in Koi from 79p

Goldfish from 25p

Generous discount on coldwater equipment for larger purchases.

Full range of fibreglass pools, excellent range of British grown lilies, marginals and oxygenated plants.

Pond pumps and filters all top brands available with up to 40% discount.

We'll beat any quote in Leicestershire

NEW EXTENSION NOW OPEN

Open Monday, Tuesday and Thursday 11 to 5pm,
Wednesday 2-6pm, Friday 11-7pm, Saturday and Sunday 11-4pm.

CALL (0530) 812448 FOR A QUOTE OR INFORMATION

or why not call in and see us at

2 NORTH AVENUE, HUGGLESCOTE, COALVILLE, LEICS.



Vast range of coldwater fish, plants and accessories.



WORLD OF FISHES



31 North End, Felbridge, East Grinstead,
West Sussex.

Telephone: (0342) 22244

Closed Sunday & Monday. Open Tues-Sat 9.30-6.00

We cater for everybody's needs, stocking a huge selection of all popular fish. Outside ponds stocked with fully acclimatised pond fish including Koi up to 20in.

Fabulous selection of indoor fancy coldwater fish.

One of the best selections of marine fish and invertebrates in the South, with shipments arriving every week.

Large colourful and varied display of both common and unusual tropical fish all displayed in fully planted aquariums.

Eheim filters less 25% Pond pumps less 10%

Butyl, PVC and Green PVC pool liners all at extremely competitive prices.

FANCY GOLDFISH

We have an extensive selection of imported fish available, e.g., Orandas, Bubble Eyes, Pearl Scales, Ryunins, Robes, Phoenix, Butterfly, Celestials, Ranchu, Telescopes, Clowns and Pompons etc. (Subject to availability). Trade enquiries welcome.

ASH HOLT AQUATICS

BANK END ROAD, FINNINGLEY, DONCASTER

TELEPHONE: 0302 771667

The Aquarist and Pondkeeper run regular supplements through the year.

A TROUBLE-FREE POND SEASON



... WITH **Waterlife**

HALOEX Neutralises chlorine, fluorine and other fish poisons in raw tapwater. Treat tapwater when setting up new pond and for part-changes 300-1200 gal.

ALGIZIN^P Broad spectrum protozoicide, fungicide and algicide. Treats white-spot, velvet, costia, all fungal diseases and blanket weed — 2000 and 8000 gallons.

SEAVITA Multiple vitamin liquid food additive. Soak flakes and pellets before feeding. Greatly enhances colour, disease resistance and sexual vigour.

ALGIZIN^A A super algicide which controls all algal species (green water and blanketweed) for up to six months per treatment. Available in packs to treat 300, 2000 and 8000 gals.

POND FLORA A tableted pond plant fertilizer. Bury one tablet in amongst the plant's roots — marginals and submerge plants. 30 tablets per pack.

PARAGON A parasiticide similar to Sterazin[®] but totally harmless to Orfs and Rudd. Use each spring and autumn when parasites threaten. 700/1400 gals.

PONDSAL An electrolytic general tonic for all pondfishes. Should be used in conjunction with Sterazin[®] to control horse leeches — 150 gals.

STERAZIN^P For the destruction of gill-flukes, body flukes, fish lice, water-tigers, fish leeches, anchorworms and internal worms — 2000/8000 gals.

BROAD RANGE pH A test kit covering the pH range 4 to 10 with a totally different colour at each point on the scale. Includes buffer packs.

MYXAZIN Brand leader broad spectrum aquarium and pond bactericide since 1971. For the treatment of fin-rot, body-rot, ulcerations and cloudy eyes. 300/1200/4800 galls.

BE A 'POOLS WINNER' THIS YEAR

Waterlife

RESEARCH LIMITED

Bath Road, Longford, West Drayton, Middlesex

Tel: 0753 682487 or 685696

Telex: 847757 'ELERAY' G. Fax: 0753 685437

**NEW FOR YOUR
GARDEN POND**

EHEIM

THE EHEIM POND FILTER

A garden pond can give so much pleasure – especially when used as an outdoor aquarium, with its ample and natural habitat for your magnificently coloured ornamental fish. Provided, of course, that you have clear water, for with a cloudy pond you can see nothing of the fascinating play of its inhabitants.

The EHEIM pond filter takes care of the reliable cleaning and permanent circulation of the water in your pond. Not only this, but the standard spray nozzle creates a lively play of water, produces surface movement and introduces oxygen. An ideal filter with varied individual possibilities for use.



John Allan

Australian Agent: Aquacenta Pty., Ltd.
53 Garema Circuit, Kingsgrove, N.S.W. 2208
USA Agent: Hawaiian Marine Imports Inc.
PO Box 918687, Houston, Texas 77215

AQUARIUMS LIMITED Eastern Way Industrial Estate, Bury St Edmunds, Suffolk IP32 7AB Telephone: (0284) 755051

Books

An Interpet Guide to South American Catfishes

By: David Sands
Published by: Salamander Books
Distributed in the pet trade by: Interpet Ltd
Price: £4.95

Salamander Books move away from the dreaded number 13 (and begin the long road towards their second international million sales mark) with the latest of their continuing Guides — **South American Catfishes** by David Sands. This matches up perfectly with the earlier volume in the same series (by the same author) on African & Asian Catfishes and provides a compact overview of the popular bottom-dwelling fishes from the opposite side of the Atlantic.

The first quarter of the book is given over to understanding "the Catfish," how it fits into the natural structure of things down "South America way." Choosing suitable species can be undertaken in two distinct ways — those that will fit into your existing aquarium, or how to provide suitable aquarium conditions for catfishes of your choice. This facility is made possible by the sheer amount of information given as to the fishes' own needs and their individual generic characteristics. The furnishing of the aquarium is dealt with most imaginatively with plenty of practical hints and tips to "trick" your fishes into feeling at home — this is especially valuable when you consider the majority of catfishes are nocturnal by nature — while the hobbyist isn't!

Breeding catfishes is no longer the exception to the rule, and this fact is borne out by the inclusion of breeding information on

approximately two-thirds of the fishes described in this book. Again, as with aquarium furnishing, there are a number of ploys to be used to stimulate the fish into spawning and, judging by the results, they are pretty effective, too!

Species are described fully, with Habits, Length, Diet, Sex Differences, Aquarium Breeding and Aquarium Compatibility being the main headings following

the scientific and popular names. Accompanying these details are extra, often quite copious, general notes highlighting any special "keeping" notes, or other aquarium behavioural activities.

Readers of David Sands' books will know that he is quite likely to come up with controversial opinions, and his comments on stocking levels in the early part of the work will certainly set you thinking. While it is quite understandable that the addition of six bottom-dwelling species might not unduly affect the swimming space available to the rest of the tank's inmates, it needs some extra effort of thought to readily accept the conclusion that you could keep a trio of *C. caesus* together with a trio of *C. paleatus* in a small community aquarium . . . without affecting the total number of fishes that can be kept in the tank. Either the author is privy to a scientific secret of the breathing methods of these fishes, or else his mathematics are a little suspect!

The book is certainly 'Salamander quality' as usual, although I did detect one or two very minor spelling slips, illustrations and artwork again being of the highest quality. If you are still of the opinion that catfishes start and stop with *Corydoras*, then this book will do much to prove otherwise.

Dick Mills

At Last — an Inshore Marine Guide with Photographs!

The Marine Conservation Society
Guide to Inshore Marine Life
By: David Erwin & Bernard Picton
Published by: Immel Publishing
Price: £9.95

"With their appetite whetted, they (rock pool dippers/snorkellers, etc.) will go to the book shelf to find a marine life guide to explain what they have seen. At that point, they will be disappointed to find that the illustrations often bear little or no resemblance to what they have seen and that the scientific jargon used confuses rather than enlightens".

Anyone who has ever found him/herself in this frustrating situation will know only too well just how true this statement is. For all their undoubted value, the old guides often leave a great deal to be desired when it comes to illustrating the organisms so adequately described in the text.

David Erwin's and Bernard Picton's book goes a long way towards redressing this balance . . . as far as their selection of organisms goes, that is.

The excellent photographs (all 200 or so) are in full colour, thus showing the fish, invertebrates, algae, etc., just as they are, or are likely to be seen, in their natural habitats. Each photograph is surrounded by a series of symbols which, once learned, provide a wealth of information at a glance. All good stuff, this — and of commendable value to anyone who delves into this colourful book. Yet, despite these undoubted strengths, the book has several weaknesses which, in my opinion, represent lost opportunities that could have been avoided at no (or little) extra cost.

For instance, cutting through scientific jargon is one thing (and a praiseworthy one when it comes to books aimed at a wide readership). However, this does not necessarily have to mean almost total avoidance. As long as terms can be adequately explained, they can be justifiably included. In this book, only the briefest details are given. How, for example, does a Sea Squirt or Tunicate differ from a Sponge? What is Kelp? How does it differ from Seaweed? Why are they both Algae? What is a Lamppshell (other than "not a mollusc")? Why isn't it a mollusc? . . . and so on.

This last example is a good representative of the sort of thing I mean. Lamppshells (Brachiopods) are not often seen and, then, rarely in the form of a good-quality photograph such as that found on page 84. Why, therefore, miss the opportunity to tell us something about Brachiopods?

I do not wish to sound over-critical, because I really do think that this book represents a major step in the right direction. Nevertheless, I feel I must express the view that 10 "species" pages out of 100 (the total length of the book is 120 pages) hardly seem an adequate quota when it comes to inshore fish. Selection of appropriate subjects which, inevitably, means rejection of others, is notoriously difficult. However, when it comes to inshore fish, surely, species such as Cornish Suckers, Rock Gobies, Corkwing Wrasse, Three-bearded Rocklings, Tompot Blennies, and others, appear to be better choices, given the limited space available, than Pouting, Pollack, or Coley.

The **Guide to Inshore Marine Life** will prove extremely useful to all who consult it, and deserves to sell well. It should also, I think, be regarded as a first, and very worthwhile, step by the M.C.S. and the publishers towards compiling a much more comprehensive and informative photographic survey of the sometimes spectacular, and always interesting, wealth of marine life living round our coastline. I look forward to the next installment . . .

John Dawes



FRITZ

IT'S HERE NOW!

CORALS Beautiful natural coral that won't disintegrate in tanks. Suitable for both Freshwater and Saltwater. Available in a wide variety of colours.

ALSO

GLOW IN THE DARK

LUMINOUS CORALS!

REVOLUTIONARY TANK MEDIUMS

No more new tank syndrome. Yes, actual "live" nitrifying bacteria provides "instant start-up" conditions for your aquarium.

PLUS MANY MORE EXCITING PRODUCTS

- ★ pH blocks that will constantly monitor and correct your desired pH setting for just a few pounds.
- ★ Super indestructible "tiny bubble" air diffusers.



FOR ALL "FRITZ" PRODUCTS PLUS PROFESSIONAL ADVICE ON ALL ASPECTS OF FISHKEEPING CONTACT ONE OF THE LOCAL STOCKISTS LISTED BELOW:

CRAWLEY PETS
SUSSEX
0293 29122

JP PETS
NATIONWIDE
0493 863862

ROCKINGHAM AQ.
SURREY
01-688 5117

BURGESS AQ.
ESSEX
0277 622086

ALTOWS
ESSEX
0268 726421

ROMAN TROPICALS
E. LONDON
01-980 0607

EASTCOTE AQ.
MIDDLESEX
01-868 2480

SWALLOWS AQ.
ESSEX
0268 781265

PETERSHIELD AQ.
HANTS
0730 68363

SOUTHVIEW AQ.
NORFOLK
0493 79212

COLCHESTER AQ.
ESSEX
0206 540038

COUNTY AQ.
WARKS.
0627 854007

WATERSKATE
YORK
0943 464649

IPSWICH AQ.
SUFFOLK
0473 230961

AQUAPLAN
S. LONDON
01-771 1349

NEWHAM AQ.
KENT
0622 36848

AQUAZOO
STAFFS
0283 64174

STAN'S
ESSEX
0702 67859

WATERSCAPE
YORKS
0943 464649

WHOLESALE TROPICALS
E. LONDON
01-739 5356

VILLAGE PETS
ESSEX
04027 53510

CORAL REEF
DERBY
0332 675880

WYEVALE AQ.
BEDS
LUTON 20551

AQUATIC CENTRE
W. SUSSEX
0803 770237

FISHES GALORE
CAMBS
0480 88809

JP PETS
(MAIL ORDER)
0493 858719

CORAL REEF
S. LONDON
01-693 9927

OCTOPUSSY
BEDS
0682 660897

WYNCHFORD AQ.
HANTS
0262 642951

BURTONS AQ.
HERTS
0920 870852

CORAL BAZAAR
SURREY
0737 812475

AQUAZOO
CROYDON
01-688 1298

FINS
CORNWALL
0326 311959

EASTBOURNE AQ.
E. SUSSEX
0323 30636

FISH TANK
BRIGHTON
0273 674077

BARNSTAPLE AQ.
N. DEVON
0271 44858

MARINE INN
HERTS
0727 63414

IF YOU WOULD LIKE YOUR SHOP LISTED ABOVE CONTACT BILL SAINT OF "AQUA-LABS" RIGHT AWAY! TEL: 0621 741966.



Final chance to WIN a superb £2,000 Lahaina Kailua Series II Aquarium System



THE COMPETITION

Part I of this challenging competition was published last month. Now here's Part II. The names of all those entrants who answer all the questions correctly **both months running** will then go into the hat for the draw which will take place on **1 May '88**. The first correct

double entry will then win the **£2000 Kailua Series II Aquarium System**, courtesy of **Lahaina**. Read **THE KAILUA STORY PART II** before you attempt this month's competition. Good Luck!

THE KAILUA STORY (continued) — THE SERIES II SYSTEM By Chick Holland

The main feature of the new **Kailua Series II** system is that it eliminates any suspended or accumulated mulm or detritus which would otherwise halt the growth of corals and invertebrates, or even kill them. The **Series II** system overcomes the problem, and differs from any other systems, by generating powerful surface and midwater currents (which remove the possibility of any "dead areas" of water), coupled with a unique **Total Bottom Scavenging Filter** which completely eliminates the accumulation of detritus.

The T.B.S. Filter

The **T.B.S. Filter (Total Bottom Scavenging)** is housed in the front section of a two-section filter column (the rear section houses two mechanical pre-filters) and works in the following way:

Two powerful fully submersible pumps are fitted so that a strong suction is created which draws water containing detritus from two areas: 1. **ABOVE** the **Perforated Floor Matting (P.F.M.)**; and 2. **BELOW** the **P.F.M.** — at the same time. Strong currents emanating from the opposite end to the suction inlet, underneath the **P.F.M.**, continually sweep any detritus that falls through the **P.F.M.** along channels into the suction inlet.

The specially designed **P.F.M.** has an open area of 44% in a square mesh configuration. The dirty water is filtered through an easily removable pad of filter wool before returning onto the surface in the form of a powerful surface turbulence current, so placed that it sweeps the surface water layer into the **C.W.L. (Constant Water Level)** outlet weir.

The suction inlet situated above the **P.F.M.** continuously draws water from within the main aquarium and this flow passes through the same filter to remove any detritus.

THE REMOTE FILTER (BIOLOGICAL)

The **SERIES II Remote Filter** follows the same pattern as the **Series I** but contains a built-in **Protein Skimmer** and a separate free-standing **De-Nitrification Unit**. The gravity-fed water flowing from the main aquarium enters the **Remote Filter** through a spray bar into the **1st Settlement Area** which contains a pre-filter of disposable filter wool. At this stage the water is pre-filtered prior to passing through an upflow compartment into the **Dry/Wet Filter Complex**. Perlite granules are used in the dry filter with coarse grade coral gravel being used in the wet filter. Having gone through the Nitrification cycle and **evaporation reservoir** fitted with an **A.L.C. (Automatic Level Control)**, a separate pump powers the **protein skimmer**, with the return flow passing over a bed of activated charcoal before draining back into the **evaporation reservoir**. The water is then returned to main show tank via **Midwater currents**.

THE QUESTIONS

1. What does T.B.S. referred to in the **Kailua Story** stand for?
2. What three factors exhibited by the **Series II** eliminate "suspended or accumulated mulm or detritus which would otherwise halt the growth of corals and invertebrates, or even kill them"?
3. What world-famous Public Aquarium will shortly be installing a **Kailua Series II Living Reef Aquarium**?

THE NEW LAHAINA DE-NITRIFICATION UNIT. (A.D.F.)

Salt water, having undergone Nitrification, gradually accumulates nitrates. This new filter effectively removes nitrate in the following manner. A small diverted flow from the protein skimmer pump is fed into the first of 6 up/down chambers at a very slow rate via a specially designed drip valve. Anaerobic bacteria are cultivated which consume the nitrates in the aquarium water. Our new formulation of food for these anaerobic bacteria is unique in that it contains a harmless colourant which detects the presence of nitrate. This food, called "**Anafood**" produced by "**Lahaina**" is fed into the first downflow chamber by means of a digital time-switch controlling a solenoid valve to give an accurate, measured flow. In operation it can be seen that, in the first chamber containing water with nitrate, a green colour is evident indicating the presence of nitrate. This colour gradually reduces to clear, as the water passes through the nitrate filter.

The **KAILUA SERIES II Living Reef Aquarium** is now in production with one of the first models to be installed in the **WAIKIKI PUBLIC AQUARIUM** in Honolulu, Hawaii.

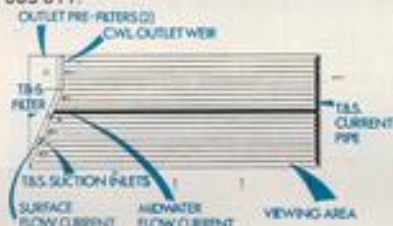
THE PRIZE

A magnificent **KAILUA SERIES II LIVING REEF AQUARIUM** complete with Metal Halide Lighting System, Remote Filter with Protein Skimmer, and a superb Solid Oak Cabinet finished to winner's choice. Size: 52in x 22in high x 20in wide.

PRICE COMPLETE £2,000.

NOT Included: Livestock — Salt — Gravel — Rocks etc. — delivery & setting up — accessory pack — A.D.F. filter — Algae filter — UV sterilizer.

NOTE: For Information Pack (£2.00), plus further details on all Lahaina systems, contact: **Lahaina Tropical Aquariums, School Lane, Udimore, Rye, East Sussex. Tel: (0797) 224237 or (058) 083 811.**



Top view of Kailua Series II Living Reef Aquarium

© Copyright "Lahaina" Aquarium Systems International

THE RULES

1. Write your answers on a postcard (or stuck-down envelope).
2. Write your full name and address in **BLOCK CAPITALS** on your entry.
3. Post your entry to: **AQUARIST AND PONDKEEPER, KAILUA COMPETITION PART II, 58 Fleet Street, London EC4Y 1JU.**
4. Closing date for **Part II** — **30 April 1988.**
5. Only fully correct entries for both **Parts I** and **II** will qualify.
6. Only one entry per household will be accepted.
7. No correspondence concerning the competition will be entered into.
8. The competition is open to all residents of the UK, other than employees of **Lahaina, Buckley Press** and their immediate relatives.

ALGARID®

Magnetic Water Treatment System



as used in Japan

For fish ponds, pools, houses and aquariums

- Reduces bacteria levels
- Controls algae slime and scale
- Boosts water quality and clarity
- Assists filtration
- ▶ **NO CHEMICAL ADDITIVES**
- No running costs – 20 year life!

easy to connect to British fittings

For data pack send this coupon, or ring 01-575 6713, or send a cheque for £169.85 (inc VAT, p&p despatch within 28 days)

name _____

address _____



MMR Ltd

Unit C7, 426 Long Drive,
Greenford, Middlesex UB6 8UH

A



Pay a visit to

WHOLESALE TROPICALS

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.

A special offer on all Eheim filters and water-pumps in stock

1007 Water pump	£10.75	2209 Int Filter	£20.50
1008 Water pump	£13.95	2011 Ext Filter	£31.50
1009 Water pump	£16.55	2013 Ext Filter	£41.50
2007 Int Filter	£14.20	2015 Ext Filter	£56.45
	2017 Ext Filter		£86.65

All External Filters include medium

All 240 volt and covered by full manufacturer's guarantee

150 Tanks of tropical fish which normally include 20 species of Synodontis, 30 species of Corydoras, 25 species of killies, Blue Brown Tele—Turquoise—Heckel discus. Clown—Blue-eye—African tiger fish, a good selection of Cichlasoma Apistogramma, and many others. Also Corydoras Panda and Brochis Britskii.

A selection of aquatic grown Cryptocorynes

● **SPECIAL OFFER** ●

Tank, nylon-coated F/top cover, heater, thermostat, internal power filter, GroLux lighting, thermometer, gravel.
24" x 15" x 12" £52.00 — 36" x 15" x 12" £67.50 — 48" x 15" x 12" £80.00 k/down tubular steel stand 24" £18.75 — 36" £21.50 — 48" £26.50

All-glass aquariums 24" x 15" x 12" £10.75 — 36" x 15" x 12" £14.00 — 48" x 15" x 12" £17.50.

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

Pond Liners — 5 year guarantee

5' x 3' £12.00 — 5' x 4' £12.50 — 7' x 5' £17.25 — 9' x 6' £23.50 — 9' x 9' £31.50 — 10' x 7' £29.00 — 11' x 8' £32.50 — 12' x 9' £36.00

Eheim fountain 3150 (1200 Lt ph) £38.00 — 1050 Universal pump, internal or external (1200 Lt ph) £36.00

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: 01-739-5356

PRICES CORRECT AT TIME OF GOING TO PRESS

News from the societies

During a lively, well attended, and highly enjoyable A.G.M. of the Association held at Aylesbury in December, the election of the Committee for 1988 took place. The new Committee is as follows:

Chairman: Tom Glass, 10 Adelaide House, Portobello Court, Portobello Road, London W11 2DD.
Vice Chairman: Jeff Ortle,

Association of Aquarists

71 St Michaels Road, Aldershot, Hants, GU12 4JJ.
Secretary: Merrilyn Shepherd, 4 Well Meadow, Leigh Park, Havant, Hants, PO9 4LW.
Treasurer: Peter Moye, 62 Elm Park Close, Houghton Regis, Dunstable, Beds.
Judges/Speakers: Ray Cooke,

5 Brooklands, Aldershot, Hants.
Membership Secretary: Nick Mallett, 31 Overstrand, Aston Clinton, Aylesbury, Bucks, HP22 5GA.
Programmes Officer: Jan Mallett, at the above address.
Confederation/A.T.I.: Tom Glass, 10 Adelaide House, Portobello Court, Portobello

Road, London W11 2DD.
Programmes Officer: Michael Shepherd, 4 Well Meadow, Leigh Park, Havant, Hants, PO9 4LW.
Committee member: Adrian Blake, 'Bounty House', Barendown, Nately Scures, Nr Basingstoke, Hants.
Enquiries from all aquarists to the appropriate Committee Member are welcome.

Diary dates

Oldham & District Aquarist Society

The O.D.A.S. 1988 annual Open Show will take place on **Easter Sunday, 3 April**, at Werneth Park, Frederick Street, Oldham. Further information and schedules from Arnold Chadwick, 9 Bronville Close, Chadderton, Oldham. Tel: (061) 652 6207.

Ashby Fishkeepers Society

There will be a Mini Open Show of the A.F.S. on **Easter Monday, 4 April** at the Grange Farm Hobbies Centre, Franklin Crescent, Scunthorpe. The main Open Show will take place on **28 August**. Full details from Terry Nelson, 49 Somerby Road, Scunthorpe, South Humberside, DN17 2EY. Tel: Scunthorpe 850525.

Preston & District Aquarist Society

The Grand Auction of the P.D.A.S. will be held at Preston Polytechnic Students' Union, Fylde Road, Preston, on **Sunday 10 April**. For further

details, ring Mr. H. Virco on Preston 555530, or Mr. A. McFarlane on Chorley 79484.

Catfish Association of Great Britain

The Association's quarterly meetings are held on Sundays at Amersham Community Centre.

Dates for 1988: **10 April, 5 June, 4 September**.

Open Show (at the same venue): **Sunday 24 April**.

Convention and AGM: **Saturday 19 November**.

Mrs Gina Sandford is the new secretary. Information from Chris Ralph, 610 Abbey Road, Popley 4, Basingstoke, Hants., RG24 9ET.

Kirkcaldy Aquarist Society

The Open Show of the K.A.S. will be held on **Sunday 17 April** at Balwearie Gardens High School, Balwearie Gardens, Kirkcaldy. £500 in prize money to be won. Details from: Peter Symington, 60 Colonsay Street, Perth, PH1 3TU.

Wrexham Tropical Fish Society

The 4th Annual Open Show of the W.T.F.S. will take place on **Sunday 17 April** at Rhosdda Community Centre, Price's

Lane, Wrexham. Further information from Brigitte Jones on Wrexham 761829 or Martyn Jones on Wrexham 759557.

British Koi Keepers' Society - Essex Section

The B.K.K.S. (Essex Section) will be holding a seminar at the Dolphin Leisure Centre, Romford, Essex, on **17 April**. There will be a full programme of prominent speakers on various Koi subjects. The Dolphin can cater for 400-500 people, so there's plenty of room available for the large audience expected. The seminar will run from 9.30 a.m. to 6.00 p.m. Tickets: £12 a head — to include a basket meal and (hopefully) a printed hand-out sheet of every speaker's lecture. For full details, contact Mrs Bobbie Barton (Secretary), 316 Bourne-mouth Park Road, Southend-on-Sea, Essex, SS2 5LY. Tel: (0702) 611750.

Reigate & Redhill Aquarist Society

There will be a Bring and Buy Sale on **18 April** at Strawson Hall, Horley, starting at 8.00pm. Full details from D. R. Payne, 282 Godstone Road, Whyteleaf, Surrey, CR3 0EF. Tel: (08832) 5388.

Kettering Tropical Fish Club

The K.T.F.C. Open Show will be held at the Boys' School, Windmill Avenue, Kettering, Northants, on **Sunday 24 April**. Details from Mr. R. Vickers, 43 St. John's Road, Ice Lodge Estate, Kettering, Northants, NN15 5AY. Tel: (0536) 519284.

Swindon Aquarist Society

The date of the S.A.S. 1988 Open Show has had to be changed due to unforeseen circumstances. The new date is **1 May**. The venue remains the same, though: Park Youth and Community Centre, Swindon. Details of the Show, and the society in general, are available from Jean Perrett (Secretary), 47 Coronation Road, Wroughton, Nr Swindon, Wilts, SN4 4AT.

Stretford & District Aquarist Society

The S.D.A.S. 1988 Open Show and Grand Auction will take place on **Sunday 1 May** at Hartford Community Centre, Canterbury Road, Urmston, Manchester. Enquiries: Dee Brightmore (Show Secretary), 4 Malvern Grove, Salford 6, M6 8AB. Tel: (061) 7074300.




West London Aquatic Centre

Visit London's leading aquatic centre

Over 130 tanks of tropical and coldwater fish
Large selection of Cichlids.
All glass tanks, of any size, made to order at very competitive prices.
Tank construction and maintenance undertaken.
Full details on request.

West London Aquatic Centre,
245 Upper Richmond Road West, East Sheen, London SW14
Telephone: 01-878 4091. Open 7 days a week.



THE water ZOO

4000 GALLONS FRESHWATER FISH

2500 GALLONS MARINES & INVERTS

437B LINCOLN ROAD MILLFIELD PETERBOROUGH TEL 0733 312142



"They are the best, most practical range of pond products I've ever used — and the most efficient and easy to clean."

Mr. Peter Schofield, Cross Keys, Dunnington, York.

Glowing words indeed! And we certainly didn't invent them. They're the words of Mr. Peter Schofield who has been using our LAGUNA 300 pump, Submersible light sets and Pond Filter in his pond since June 1987. The pond is located in the garden of the Cross Keys pub where Mr. Schofield is the landlord.

We were very interested to hear Mr. Schofield's opinion on our products, particularly as he is a man who knows a thing or two about excellence. He was winner of the 1987 North-East Competition — "Boss in Bloom" and has been runner-up in the Benson & Hedges Pub Garden National competition for the last six years.

We put a few questions to him:

Q: Did you have any difficulty assembling your system when it arrived?

A: No. I found everything to be easy to assemble, with all necessary hoses and connectors. In fact, it is so simple, the only wiring I had to do was to put on a plug! Another thing I liked was that there was plenty of cable supplied with the products.

Q: Why did you choose the LAGUNA 300 pump?

A: It was the right model for the size of my pond. It is 15" diameter at its widest point and 5" deep. I get ample flow with the fountain spray which reaches a height of about 3' from a depth of 2', even with the waterfall operating simultaneously.

Q: What about the lighting of the pond?

A: The LAGUNA Submersible light sets were ideal. I use four sets altogether — two positioned onto the waterfall, one at the fountain and one at the side of the pond. I think the ballast unit provided with LAGUNA light sets is absolutely essential for weighting the lights at the bottom of the pond.

Q: Any comments on the LAGUNA Pond Filter?

A: Only one — it's excellent! It's extremely efficient at its job, very easy to clean and its convenient handle makes it simple to remove from the bottom of the pond.

I always clean the filter once a week — it only takes a couple of minutes and it helps to avoid any malfunction through neglect.

One point I would like to make to first-time users is not to expect crystal-clear perfectly established water to

form in one season. Unless you use water treatments to speed up the clarification process, it can take up to 2 years because of the chemicals in tap water which cause it to discolour. The water will clear naturally if left alone.

Q: Have you had any problems with water leakage?

A: None at all. The product has remained perfectly sealed over eight months. I'd like to add that the impeller motors are also extremely easy to clean and reassemble.



"Laguna products in action at York"

There really is no better proof of the excellence of our products than the honest opinion from a user of our LAGUNA system. And Mr. Schofield would like to go one further. He has generously invited anyone who wishes to, to come and view the products in operation between April and October. We guarantee you'll get some invaluable advice on how you can get the most out of your LAGUNA pond.

DISTRIBUTED BY
HAGEN

U.K.
ROLF C. HAGEN (U.K.) LTD.
LELOS, W. YORKSHIRE LS4 2BE
TEL. (0533) 794566

U.S.A.
ROLF C. HAGEN (U.S.A.) CORP.
MANFIELD, MA 02048

CANADA
ROLF C. HAGEN INC.
MONTREAL, QUE H4R 1E8

THE
Laguna
SYSTEM

NEW LAGUNA, SAFE, VERSATILE AND SIMPLY BEAUTIFUL



Fountain/
Waterfall
pump kit



Diversion
valve
(converter for
Fountain and
Waterfall)



Pond/Pool
filter



Coloured lens
accessory



Submersible
light set



When you introduce the new LAGUNA system to your garden pond — just watch it spring into life! Fountains, waterfalls, cleverly placed lighting and filters all come together to create an exquisite and individual pond — designed exactly to your own specifications.

NEW

LAGUNA is a totally new range of pond products developed by aquatic experts. We're already responsible for other leading aquatic products such as Aqua Clear, Fluval and Nutrafin.

Because LAGUNA is new, it incorporates all the best features of existing products. So you can be sure that when you choose LAGUNA, you are choosing the best there is.

SAFE

Safety is of paramount importance. That's why the whole system operates via a low voltage transformer unit — and not directly from the mains supply, also the motors are epoxy sealed and have separate low voltage connectors. LAGUNA was tested in an independent laboratory to ensure it met electrical equipment safety regulations (1975).

STRONG

For the majority of pond sizes — we've the right pump capacity to handle it. Choose from three superb models — the 100, 200 and 300 LAGUNA pumps. Each has impressive strength and can force a water column from 1.2 to as much as 2 metres and with a choice of 3 water output rates you can create some really spectacular fountain sprays.

VERSATILE

There are so many ways to use the LAGUNA system. So you're sure of getting just the pond design you want. An ingenious diversion valve, for example permits a simultaneous waterfall and fountain. Then there are five different sprayheads for your fountain. And a dazzling array of coloured lenses to create those extra-special lighting effects.

SIMPLE

Beautifully simple to install — the fountain and lighting kits come complete with everything you need. No tools are required for installation or maintenance. Even the fountain pumps are simplicity themselves containing only one very reliable moving part.

DISTRIBUTED BY
HAGEN

U.K.
ROLF C. HAGEN (U.K.) LTD.
LEEDS, W. YORKSHIRE LS14 2NE
TEL: 05320 79444

CANADA
ROLF C. HAGEN INC.
MONTREAL, QUE H4B 1E8

U.S.A.
ROLF C. HAGEN (U.S.A.) CORP.
MANFIELD, MA 02848

THE LAGUNA SYSTEM

FISHWORLD

at
ALEXANDRA PALACE & PARK
NORTH LONDON



21st & 22nd May 1988

A GREAT DAY OUT FOR ALL THE FAMILY

See hundreds of tropical, marine and freshwater fish on display and for sale PLUS everything you need to set up, stock and maintain aquaria and garden ponds. Meet the experts and get advice and ideas. A wide variety of trade stands and fascinating exhibits.



Organised by
The Federation of British Aquatic Societies
50th Anniversary

INTERNATIONAL OPEN SHOW

- 37 Classes • Splendid new trophy for BEST IN SHOW plus valuable prizes for FIRST in each class
- Tableaux • Aquascapes and more!

For further details, contact:
FISHWORLD 88
Cliveden House
Priors Way
Bray
Maidenhead
Berks. SL6 2HP
Tel: 0628 38912
Telex: 848794
Fax: 0628 770902

- Tanks • Ponds
- Pumps • Filters
- Liners • Plants
- Heaters • Gravel
- Ornaments
- All accessories

Specimen koi
and exotic fish
specially flown
in for the
occasion

Opening Times:
Saturday 21st 10.00 - 6.00
Sunday 22nd 10.00 - 5.00

Admission Prices: Adults £2.00
Children u. 14 and O.A.P.'s £1.00
Special Group Rates

Bars
Restaurants
Free Parking

Amphibians
Reptiles

OUT AND ABOUT

with John Dawes

Trout, ornamentals, and more at the mill

Take a 15-acre run-down fish farm, put in a good dose of foresight and creativity, back it up with four years of hard work and determination ... and you end up with **Tewin Mill Fish Farm and Water Gardens**.

In the words of Director **Martin Symonds**:

"I purchased the site in 1984 and, since then, have transformed it into a set-up combining a fishery, a fish farm (dealing with trout and ornamental fish), a centre for selling coldwater fish, a separate one for tropicals and marines, and a large plant section offering all accessories dealing with water gardening".

The fish farm is split into two areas. The first deals with the rearing and growing on of Brown and Rainbow Trout, both for re-stocking angling waters and for the table. The shop sells fresh trout weighing from as little as 10oz to as much as 10lb. This part of the business also caters for hotels and restaurants.

The rest of the farm is used for breeding and rearing ornamentals, including Koi, Goldfish, Shubunkins and several varieties of coarse fish. Within the next few years, Martin hopes to be able to produce enough fish to meet all the company's needs and still have enough to sell to other aquatic trade outlets.

Regarding the Koi broodstock, Martin went to Japan to select them and can now sell home-produced Koi between 4in and 15in.

In addition, weekly imports arrive from Singapore, Thailand, Africa and South America which, coupled with the pledge that Tewin's "will always try to help obtain fish for customers", means that there is always a great deal of activity and variety at the Mill. There are even official feeding times, so make a note they are — at 10.00am, 12 noon and 2.00pm.

All coldwater fish are quarantined, either at Tewin Mill (in their ponds) or at Martin's other fish farms in Norfolk.

Further, sophisticated centralised filtration ensures that water quality for all the fish, from coldwater to tropical

marines, plus the invertebrates, is always at its best.

The whole complex of buildings and ponds sits in 15 acres



View looking at a few of the ponds with the Trout Shop, Tropical House and Coldwater House in the background.

of Hertfordshire countryside, and, with two fishing lakes, one mile of river fishing, plus the water gardens, Tewin, to quote Martin, "makes a unique day out for people to come and visit a place solely for the enjoyment of fish, and the world of fish, in all its contexts. There is a large free car park, and we are open seven days a week, from 9.00am to 5.30pm."

For further details contact **Martin Symonds (Director)** or **Glen Bird (Manager)**, **Tewin Mill Fish Farm and Water Gardens**, Kingsbridge, Tewin, Nr. Welwyn, Herts. (between Hertford and Welwyn on the B1000). Tel. (043 871) 6019.

So you think that's funny, do you?

BY JOHN YOUNG

Well, I feel quite sure it will be. What am I talking about? I refer to a new feature film due for general release in August of this year which stars Michael Palin, Jamie Lee Curtis (daughter of Tony) and an Angelfish.

The title of this cinematic extravaganza is "A Fish Called Wanda", and the producer, in his wisdom, had decided that a film with such a piscatorial title also required a fishy background to the credit sequence which precedes all major productions of this kind.

All of which may help to explain why the writer found himself talking to the great **John Cleese** inside that prestigious fishkeeping emporium **WetPets** of Romford around lunchtime on a Sunday afternoon towards the end of January.

Mr Cleese, who also has a part in the film, was accompanied by his four-year-old daughter Camilla, and proved to be not all eccentric — and very unlike his screen image. He was, in fact, supervising a small film crew whose lens was firmly trained on a tank especially supplied for the occasion by **Seabray Aquariums**.

Terry Evans, the well-known proprietor of **WetPets**, was acting as adviser and constantly changing or adding to the occupants of the tank, while hundreds of feet of film ran through the camera, most of which will undoubtedly end up on the cutting room floor. It never ceases to amaze me that so many people can spend so much time ultimately producing no more than one minute of film!

However, Terry Evans was understandably pleased that his shop, which boasts a really splendid display of livestock, had been chosen for the project. And why not! A very tasty buffet had been laid on for the various guests, and his friendly staff looked after all of us very well.

It was a fascinating couple of hours, and the film, which has gangsters, a jewel robbery and Wanda the Angelfish, in whose tank the precious gems are rumoured to be hidden, sounds well worth a visit.



Proprietor (Terry Evans) and producer (John Cleese) with a common aim — to get the best "performance" possible from an unsuspecting Angelfish called Wanda!

GEM HORIZON ALL-GLASS AQUARIUM



Tough plastic frame top and bottom provides extra impact resistance to prevent chipping, etc.

The bottom frame allows the tank to be placed on any suitable level surface **without the need for unsightly layers of polystyrene.**

- Large selection of sizes available ranging from 16" to 54".
- Recommended prices start at under £10.00 inc. VAT.
- Injection moulded high impact frame standard in all sizes.
- Double strength sealer is used throughout for extra protection.

Shop and compare! — no other all-glass aquarium can offer you the price, quality and dependability of the GEM HORIZON

John Allan

AQUARIUMS LIMITED

Eastern Way Industrial Estate, Bury St Edmunds, Suffolk IP32 7AB
Telephone: (0284) 755051

Please send me information on your Aquarium products for which I enclose 2x18p stamps.

Name _____

Address _____

Post Code _____

FROM ASAGI TO MATSAKAWABAKE

(No — not a motorcycle advert)

FROM PIPEFITTINGS TO PUMPS

(No — not an advert for a plumbers merchants)

*In fact (nearly) EVERYTHING you could want to build or stock
a koi pond.*

(Oh — an advert for Kent Koi)

Lots of extras too like books and medications, pond construction advice, filter media etc.

But really with any of these adverts it would be better if you came and had a look for yourselves and make up your own mind.

KENT KOI KO.

POLHILL CENTRE, BADGERS MOUNT, SEVENOAKS. TEL: 0959 33567

Where?..

M25, Junction 4 and spur to first roundabout, take first exit to second roundabout then second exit and Polhill Centre is 300 yards on left.

Normal trading 7 days a week 10 am to 6 pm.



Tomorrow's aquarist

By Alan Balfe

Tyro's diary

The water in the tank keeps going an orangey-amber colour. I haven't got the faintest idea why, other than the u/g filter might be dirty or blocked, so I decide to clean the tank completely! Getting my trusty freezer box, I siphoned the water from the tank into it and then transferred the fish.

Removed all the gravel and left it in a bucket under a running tap so that it would be washed totally clean. When I took out the filter plates they were covered in a yukky brown slime, so I scrubbed them in clean water until there was no trace of slime, and then I soaked them in strong salt solution, having read somewhere that this was a good disinfectant.

The surface of the water became covered in brown scum, so I scrubbed the plates again. Finally, the water was crystal clear. To be on the safe side, I scrubbed the tank clean in the same way.

By the time I was finished I felt shattered, water is very heavy. However, I got the tank back into place and replaced the filter plates. Poured in the gravel and set in the rocks so that it looked artistic and then began to refill the tank with fresh water.

The water I used was too cold so I decided to top it up with hot! Have you ever seen a two-foot tank crack all the way round? At the point where the

hot water met the cold, the glass cracked, on all four sides! There was water flowing everywhere. I grabbed the tank as best I could and put it into the bath and then mopped up the spill water. What do I do now? The water in the freezer box was getting colder by the minute. Panic ensued.

● Next time: Tyro gets out of his predicament.

LETTER SPOT

In January's article I wrote about an aquarist shop called 'Birstall Aquatics.' The article may have given the impression that I was dissatisfied or unhappy with the service I got. Nothing could be further from the truth, and if I gave that impression then I would like to apologise, publicly, to John Baker, the owner of the shop.

John has sent a letter offering what I think is very sound advice, and some background information. Unfortunately, there isn't enough room available to print his entire letter, so I have had to condense it a little.

"The first point related generally to the purchase of new fish. The major problems with all new fish are stress-related and it is for this reason that aquarists must go to great lengths to reduce the stress factor as much as possible. In this shop (Birstall Aquatics, Wanlip Lane, Bir-



stall, Leicester) we never sell any fish, unless they have been in quarantine for, at least, a week after we have bought them. This applies to all fish, even those that have already acclimatised from the wild in a wholesaler's tank. We have found from experience that it takes at least a week for a fish to settle down into its new surroundings, and it can take up to a month for the more sensitive species.

When fish are purchased they inevitably go through a stressful set of circumstances. They are chased around, pulled out of the water, dumped back in, put into plastic bags, put into a brown bag, joggled around on their trip to the car, bounced up and down on their homeward journey and, finally, introduced into a strange tank full of fish they have never seen before.

Fortunately, healthy fish can stand this treatment, and most

do. In your case, you prolonged their stress by placing them into another container before placing them into the tank.

The second point is that tanks rarely need to be completely stripped. Usually, regular, routine maintenance is all that is required. We have, for example, tanks that have never been stripped for more than three years. The problem with completely stripping a tank is not only the one of introducing 'fresh' water that may contain various chemicals, but the more longterm one of NEW TANK SYNDROME.

That is to say, that over a course of time, one grows a culture of beneficial bacteria in the tank that help to break down the waste products produced by the fish from the harmful ammonia, through the nitrite stage to the relatively harmless nitrate. When a tank is completely stripped, this 'sewage treatment plant' is destroyed, until it has time to regenerate and, during this time (usually about four weeks), the ammonia and nitrite levels in the tank increase. This, again, puts the fish under stress.

The stocking levels in a newly-established system are generally best kept to about a quarter of the final tank capacity because of this early nitrite peak.

I hope these comments are of help to you and please feel free to contact me if I can be of further help to you."

I think that John's letter raises some points that we frequently forget about. If you are completely new to fishkeeping it is very easy to overlook them, as I did. Thanks a lot, John.

Tanked Up! by Phil Baber.





DOLPHIN Aquariums and Cabinets



SYSTEMISED aquaria are designed for keeping either Tropical, Marines, Invertebrates or Tropical Freshwater fish without the problems often encountered with more traditional methods. SEABRAY have combined proven fishkeeping techniques with quality equipment and materials that require minimal attention yet achieves maximum results.



Six sided Georgian style aquarium and matching cabinet.



39" special de-luxe wood veneer tank and cabinet in various finishes.



48" special de-luxe wood veneer tank and cabinet adapted for use with either Seabray Systemised or Tunze systems.



The Seabray 'Dolphin' bow front aquarium and cabinet.

SEABRAY — ASK FOR THEM BY NAME
In case of difficulty ring 0708 864425 for your nearest stockists.

COMPETITION WINNERS



£500 Aquamerck Test Kit Competition — Sponsored by Technical Aquatic Products

Yet again, thanks for a magnificent response. Out of the hundreds and hundreds of cards sent in, the lucky winners were:

1. **First Prize:** A Complete Aquamerck Water Testing Laboratory valued at around £100
J. CLARKE, 111 Chestnut Rise, Plumstead, London, SE18 1BJ.
2. **12 Runners-up:** Each to receive three individual Aquamerck Test Kits valued at £35 each.
MRS. J. FIELDEN, Todmorden, Lancs.
MR. D. SANDERSON, Hexham, Northumberland.
MISS D. A. MANLEY, Benwell, Newcastle-upon-Tyne.
MR. K. J. DRING, Lockleaze, Bristol.
MR. A. K. BOSSERT, Chessington, Surrey.
JENNIFER SMITH, Bute, Scotland.
MARK WESTACOTT, Aylesbury, Bucks.
MR. C. J. POCOCK, Shortlands, Kent.
D. HOME, Stanwell, Middlesex.
MR. M. L. BROOKER, Croydon, Surrey.
D. R. BRISBANE, Prestwich, Manchester.
MR. P. J. HILLS, Worthing, Sussex.

The correct answers were: 1. Hydrogen ion concentration
2. Nitrites; 3. Carbonate Hardness.

Our sincere congratulations go to all the lucky winners, and our thanks to all the entrants, plus our generous sponsors, Technical Aquatic Products.

NEXT MONTH

With the pond season beginning to get into gear, we take a look at various aspects of pondkeeping, and the accessories that go with it. Doing the honours on such subjects as pond filtration, fountains, waterfalls, watercourses, lighting, etc., will be 'Aquarian's' Dr. David Ford, Dick Mills and our editor, John Dawes.



● Fancy a luxury weekend at the Hilton Hotel in London with expenses, champagne, tickets for a top London show and five-star treatment at 'Aquarian's' prestigious Fishkeeping Exhibition held at Sandown Park? Well, if you do, we have just the thing for you — a really super FREE-TO-ENTER competition, courtesy of 'Aquarian' Fish Foods. Totally unmissable!
Also in May, a mouthwatering selection of top-quality articles for coldwater, tropical and marine hobbyists alike... as well as the odd special feature, and our regulars, to round things off. Join us in May... book early!

TUNZE

Takes the Guesswork Out of Water Filtration

Over 30 years

continuous development in aquarium technology
has produced the Rolls Royce of system filters

the finest form of flattery!
Why buy a copy when you can have an original,
that grows with your hobby?

AQUAMAGIC LTD

MARINE HOUSE MARKET STREET
WATFORD HERTS. WD1 7AN
Telephone (0923) 39637 Fax 0442 60091
Telex 826933 BALRAWL G

Your Key to Aquaria perfection

NEW FROM SPRINGFIELD MARINER 2000

UNIQUE DECORATED TUBE
BLENDS WITH YOUR PLANTS



INSIST ON
MARINER
FOR QUALITY &
RELIABILITY

**SPRINGFIELD
ELECTRICAL CO LTD**
7, Dean Street, Marlow
Bucks SL7 3AA
Tel: (06284) 71213

EHEIM — Major stockists
TUNZE — Major stockists
INTERPET MARATHON RANGE
(Internal and External Filters) — Major stockists
For any filtration needs — CALL US —

MR. FISH

*Is one of the largest shops
in the country —*

2,000 sq ft of purely aquatic goods, 3,500 gallon, 60 tank freshwater tropical system, a superb centralised invertebrate system, top quality coldwater fish and fancy goldfish in two separate systems, and, nearing completion, one of the most advanced marine systems there is.
A FURTHER SYSTEM HOUSES TRUE AQUATIC PLANTS OF GREAT QUALITY.

**MR. FISH — THE TOP NAME
IN AQUATICS**

Mr Fish MR FISH
90-92 Bronham Road, Bedford MK40 2QH.
Tel: (0234) 69333
15 mins from Junction 13 (M1) on A428
Sundays: Open 10.30-5pm to "Sunday Club"
members only. But you can join and buy today.

**INSTANT
CREDIT
FACILITIES**
UP TO £1,000
SUBJECT TO
QUALIFICATION

TONGHAM AQUARISTS OPEN SHOW

15TH MAY 1988

ASH PARISH COUNCIL RECREATION HALL
ASH HILL ROAD,
ASH,
ALDERSHOT.



BENCHING
9.00-11.00 AM

**JUDGING TO
A of A RULES**

REFRESHMENTS ALL DAY

RAFFLE FOR FOOD & EQUIPMENT

OPEN FOR PUBLIC VIEWING 4.30 PM

**SCHEDULES/CLUB INFORMATION FROM
MELVYN GRANT 0252-310564**

Coldwater jottings



Stephen J. Smith

Coldwater survey

Among the thousands of questions posed to me throughout my travels is one which pops up regularly: "Where can I join a society to find out more about coldwater fishkeeping?"

In addition to the half-dozen main British Goldfish societies, there are also a number of Koi societies or sections around the country, as well as coldwater sections of tropical societies.

But, how many people are fully aware of their existence? So "Coldwater Jottings" is giving all societies a golden opportunity to put forward their so vital involvement in the coldwater scene — and providing the chance to win a superb set of coldwater books for their society library.

The books have been kindly donated by Interpet and are all part of the "Interpet Guide" series. They are: *Fancy Goldfishes*, *Koi*, *Coldwater Fishes*, and *Garden Ponds*. Each book is lavishly illustrated in full colour and with up-to-date photographs. Information is written in a concise manner and each book is a must for any aquarist.

Information sent by every society will be published in these columns to help attract new members to the hobby.

All entries received from societies by **Friday 27 May** will be entered for a draw to be made by the Editor of *Aquarist and Pondkeeper* to determine which lucky society will receive

the book selection.

So, come on club secretaries. Write out the following details now and send them to: **Societies Survey, Coldwater Jottings, Aquarist and Pondkeeper, 58 Fleet Street, London EC4Y 1JU.**

- Name of Society and meeting place(s)
- Name, address, and telephone number of club secretary
- Annual membership fee
- Number of UK/overseas members
- Services provided (ie: Regular meetings, specialist talks, club shows, open shows, resources library, members' bulletin, inter-club competitions, outings, etc.)
- Any other points of interest (ie: current activities, 1988 calendar of events, shows, etc.)

Ryukin

I have had no little response to my brief *Spotlight* feature on the Ryukin (*Aquarist and Pondkeeper* — January 1988).

In the closing paragraph, I wrote "I have yet to find any calico or nacreous Ryukins", so I am indebted to **Andrew Hudson**, proprietor of **Ash Holt Aquatics** in Doncaster for letting us know that he imports Calico Ryukin from Singapore, from where he also obtains such exotic and curious Goldfish varieties as Scarlet Cap with Purple Robe; Rainbow Phoenix; Blue Moor; Copper Oranda; Red, Black, and Red-and-White Butterfly; and Pompon Celestials.

I hope to be providing further information on some of these "new" varieties in future "Coldwater Jottings", and it is to be hoped that enthusiasts will grasp the nettle to ensure the responsible continuation and development of such strains in this country.

Black-eyed Shubunkin

"Why do some Shubunkins have black eyes?"

An intriguing feature of nacreous or calico Goldfish is the fact that, in many offspring, the eyes of the fish appear to be all-black.

This is a common feature of fish with nacreous coloration,

as breeders of Shubunkins or calico Fantails will testify. A great number of offspring produce inferior colouring (ie some fish will be either all-metallic or transparent-scaled) but also the eyes, either one or both, may be black.

This particular feature is an undesirable characteristic and experienced breeders are able to spot black or "button" eye within weeks or even days of the fry hatching.

The characteristic is not, as some have suggested, a dilated pupil. It is, in fact, a colouring of the iris — the ring of muscles radiating around the pupil. The iris should be clear and is usually a metallic golden colour, while the pupil itself is black.

Thus, of course, the button-eye appearance results in both pupil and iris being the same colour.

I have even seen button-eye Shubunkins on the show-bench and even, on one occasion, a similar fish with one perfectly-coloured eye, but the other button-eyed.

Again, this is not desirable, and any perpetuation from future spawnings should be avoided.

Society Celebration

South Park Aquatic (Study) Society is holding its 21st Anniversary celebrations on **Saturday 7 May** with a buffet/disco at Whiteley Village Social Hall (7.00pm).

Over 100 members, former members, friends and fishkeepers are expected to be in attendance, and tickets and further information are available by contacting the SPASS club secretary **Norma Brown** at **4 Coombe Lane, Whiteley Village, Walton-on-Thames, Surrey KT12 4EL.** Telephone (0932) 842011.

Comprehensive Interpet Guide

Most fishkeepers tend to welcome information which will help them gain more from their "pleasurable pursuit" of fishkeeping; and coldwater enthusiasts seem to be no excep-

tion. A most welcome and comprehensive guide to aquatic and other pet products and their use has been published by **Interpet** and their sister pet company, **Petlove**.

Just about every aspect of the hobby is covered — it would appear that the only ingredients which the company doesn't supply are fish and water!

Accompanying the product information are numerous charts, diagrams and illustrations providing advice on, for example, nutritional values of protein foods, maintaining water quality, and dealing with diseases.

The **Interpet and Petlove 1988 Product Information Guide** also covers fish and pet books and other pet products, and is a most useful reference. Copies are obtainable free-of-charge from pet and aquatic retailers and garden centres, or by writing direct to **Interpet Limited, Vincent Lane, Dorking, Surrey RH4 3YX** — but please enclose postage stamps to the value of 37p to cover postage and packing.

"Fancy Goldfishes" — one of the books which your society could win for its library.

INTERPET LTD

AN INTERPET GUIDE TO

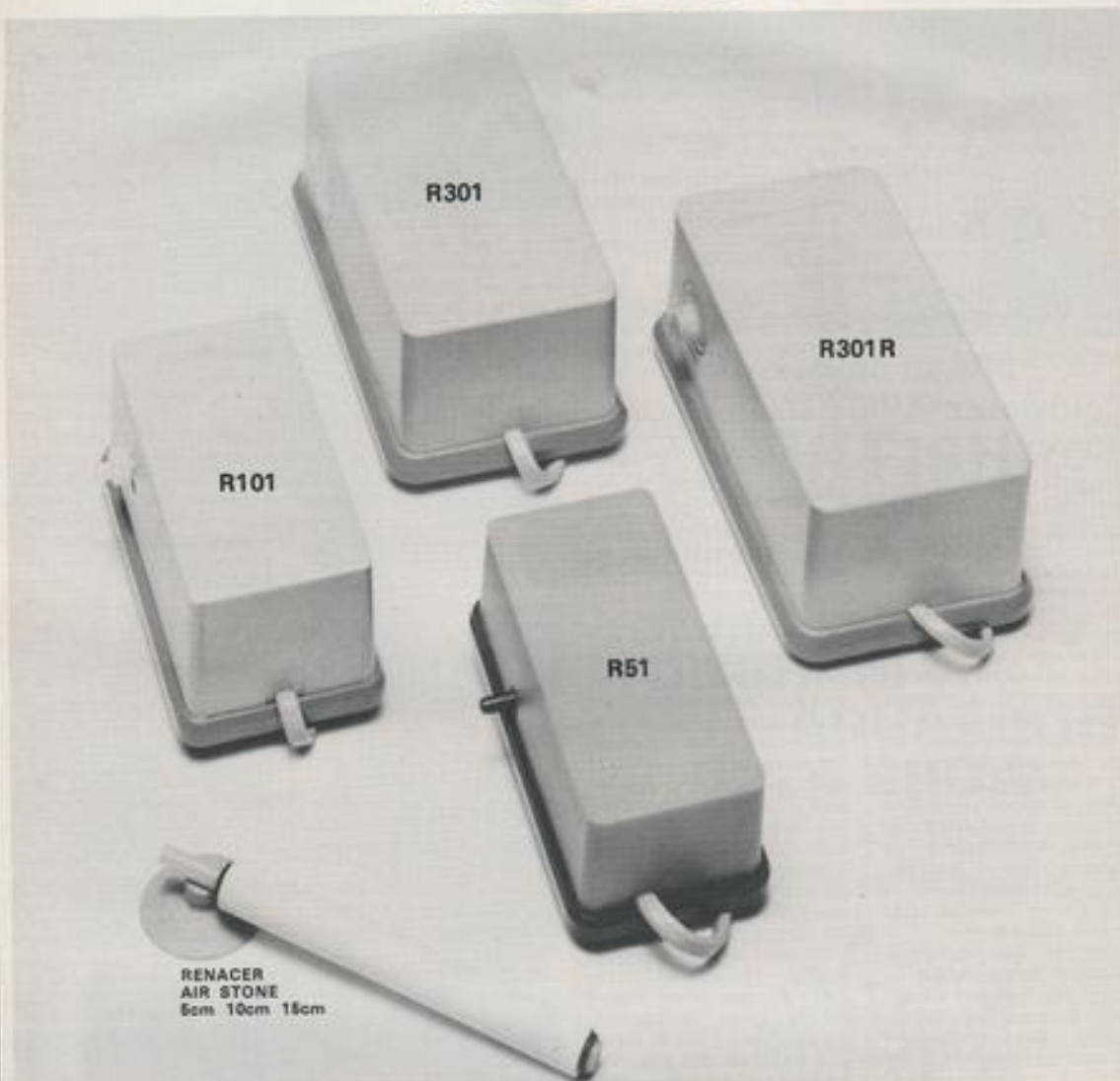
FANCY GOLDFISHES

How to keep and enjoy a wide selection of these popular and beautiful fishes in the home

Dr Chris Andrews

Illustration of a fancy goldfish, likely a variety mentioned in the text, shown in a naturalistic setting with water and plants.

AERATION WITHOUT AGGRAVATION BY **RENA**



RENACER
AIR STONE
5cm 10cm 15cm

- R51 OUTPUT IN 36" DEPTH OF WATER 1.0 LITRES PER MIN
- R101 OUTPUT IN 36" DEPTH OF WATER 1.6 LITRES PER MIN
- R301 OUTPUT IN 36" DEPTH OF WATER 5.0 LITRES PER MIN
- R301R OUTPUT IN 36" DEPTH OF WATER 5.0 LITRES PER MIN
- RENACER CERAMIC AIRSTONE CAN BE CLEANED AND USED AGAIN AND AGAIN

**COMPARE THEM AND SEE THE DIFFERENCE
IT IS SAID THAT, WE ARE THE BEST — AND IT'S TRUE!!**

In case of difficulty please contact:

RENA U.K. LIMITED

THE BURY FARM, PEDNOR ROAD, CHESHAM, BUCKS

Telephone: 0494 786759 Fax: 0494 791617

Your questions answered

Having problems? Send your queries to our panel of experts who will be pleased to be of service. Every query receives a personal answer and, in addition, we will publish a selection of the most interesting questions and responses each month. Please indicate clearly on the top left hand corner of your envelope the name of the expert to whom your query should be directed. All letters must be accompanied by a S.A.E. and addressed to:
Your Questions Answered, The Aquarist & Pondkeeper, Buckley Press Ltd, 58 Fleet Street, London, EC4Y 1JU



TROPICAL
Dr David Ford



COLDWATER
Pauline Hodgkinson



PLANTS
Barry James



KOI
Roger Cleaver



MARINE
Graham Cox



DISCUS
Eberhard Schulze

Coldwater Crayfish in the aquarium

I would like to keep coldwater crayfish. How do I look after them?

Freshwater Crayfish can grow to 4-4½ inches when kept in aquaria. They need to be kept in clean, well-aerated water and fed a varied diet containing both plant and animal matter. Food should never be left if uneaten, but quickly removed, or it will cause water pollution, which, in turn, will result in health problems for your pets.

You will need to provide plenty of shelters in your set-up so that each animal can take up residence, making conditions as near to those in the wild as possible.

I have made several enquiries on your behalf but, so far, have not been able to locate a stockist. However, these creatures do turn up in dealers' tanks from time to time, so I do hope that you will be successful in the very near future.

Coldwater plants

What sorts of plants could I put in my coldwater tank?

I recommend that you try *Egeria densa*, *Elodea canadensis*, *Lagarosiphon madagascariensis* and *Vallisneria spiralis*, though some individuals of the carp

family are particularly partial to some tasty vegetation and therefore find live plants tempting.

I believe that, if the fish are fed correctly on a properly varied and balanced diet, they are less likely to feed on the plants. If you wish, you can add a few plastic plants as there are some particularly realistic-looking ones now on the market.

There are many other species of plants which are able to flourish in a coldwater environment and an excellent book on the subject is *Coldwater Aquarium Plants*, by Vivian de Thabrew, published by Thornhill Press.

Beginners' fish and books

I have just started keeping coldwater fish and would like to know the best variety to keep and which books to buy.

Fantails are pretty yet quite hardy and relatively easy to care for. They are available in metallic type scaling or nacreous (these are very colourful: blues, reds, orange, yellow, black and violet). However, there is also a wide choice of Fancy Goldfish to choose from, many available from larger aquatic shops.

You can read lots of good advice in books such as: *Fancy Goldfish Culture* by Frank W. Orme; *A Fishkeepers' Guide To Coldwater Fishes* by Dick Mills.

The Northern Goldfish and Pondkeepers Society have a useful little book for newcomers to the hobby. It can be

ordered from the Secretary, Mr D. Padfield, Broadlands, Westfield, Ossett, West Yorkshire. Price: 70 pence, including postage.

Plants Illuminating advice

I am setting a tank into a stone fireplace wall. Since the only side exposed to natural light will be the front, how much artificial light should I provide? Also, would anything unshard happen to the plants during a two-week holiday period with the lights switched off?

You should provide light at the rate of 20 watts per square foot of surface area. A combination of one Grolox tube and one SunGlow tube will give good results. The photoperiod should be 10 hours per day. Leaving the lights off for 14 days will certainly harm your plants.

Foilar feeding

Is it true that all aquatic plants absorb their food through their leaves?

All aquatic plants have the ability, in the submerged state, to absorb fertilising elements through their leaves. In fact, those species which have weak rooting systems — or none at all, as in the case of *Ceratophyllum* — depend almost entirely on this method of



Fine-leaved non-rooting plants like this *Ceratophyllum submersum* absorb virtually all their nutrients through their leaves.

absorbing vital nutrients.

Stronger rooting plants, however, such as *Echinodorus* and *Cryptocoryne* species, derive much of their nourishment via their root system.

Koi Koi diet

At present I feed my Koi on one of the brands of Koi pellets available at aquatic shops. Is this a healthy diet?

The various brands of pellets and foodsticks available are designed to provide your Koi with an adequate, balanced, diet, so you are providing your fish with all they need by just feeding one of these and not bothering with anything else.

Some people say, though, that fish fed only one type of food must become bored and be missing out on something or other. This is reading human emotions into fish behaviour and is not the case, but I, personally, feel that it is a good thing to give fish a varied diet. My reason for a varied diet is that it seems to increase the feeding activity among my fish. I also feel that this aids in keeping the fish in the best possible condition.

Although commercial pellets and food sticks form the basis of my fishes' diet, I try to include one type of different food each day. These alternative foods are fed sparingly and no one food is fed too regularly. Some of the items I use are: worms (any found gardening go into the pool), maggots (never more than twice a week), cockles (from the fish market), peas, sweetcorn (only occasionally), lettuce, boiled wheat, and brown bread.

Feeding with these alternative foods usually takes place at teatime which allows me to remove any uneaten food later in the evening (not that any is usually left to be removed).

Marine Invert lighting

I own a 48in x 15in x 18in aquarium which I would like to set up as a tropical marine invertebrate aquarium.

The tank will be lit solely by two wall-mounted 80 watt WOTAN "FLORASET" mercury vapour spot-lamps which will be left on for 12 hours each day. Will this lighting be adequate for anemones, living rock, living corals and algal growth, etc?

How high above the water surface should these lamps be placed? Water depth will be approximately 13 inches, allowing for the depth of my filter-bed and some free-board at the top of the tank.

The type of lighting units which you intend to use are ideal for the invertebrate aquarium in that they supply lighting of the correct colour temperature for even the most demanding of **PHOTOPHILIC** ("light-loving") invertebrates such as anemones, living corals, hydroid polyps, *Tridacna* clams, etc.

However, owing to the 48 inch length of your tank I must advise you that you will require three "FLORASETS", not just the two units which you had planned. These units should be evenly spaced along the tank's length at 12 inch centres and be suspended no more than 9 inches from the all-important, tight-fitting coverglasses, in such a way that they shine vertically downwards.

Water change timing

I have recently set up a 48 x 12 x 15in marine aquarium. How often do I need to change the water?

Water changes. No one can possibly give a hard and fast answer to this question since no two aquarists possess the same feeding skills, no two aquariums' filtration systems have the same nitrification capacity, and no two aquariums have exactly the same biological loading. The three parameters to watch are:

- Water colour.** Have someone hold a white card against one end of the tank. Then, with all the tank's lighting switched on look at the card through the other end of the tank, i.e. through 4 feet of seawater. If the water looks at all yellowish, carry out a 25-33% water change as soon as possible.
- Nitrate content** — if the

nitrate level of the seawater rises to more than 50 ppm, (= parts per million = milligrams per litre), carry out a 25-33% seawater change.

- pH level** — if the pH falls below 7.9, and the addition of a pH buffer only restores it to the ideal range of 8.1 to 8.3 for a few hours at a time, then, again, you need a 25% to 33% partial water change.

Holiday care

After years of tropical and coldwater aquariums, I am taking the plunge and setting up a marine tank, but as I am going on holiday and, for security reasons, I cannot have someone come into feed the marine tank, should I wait until the holiday or set up before and put a Damsel in (holiday is ten days), or is there a way to feed over a holiday?

The usage of so-called "Holiday Food Blocks" as presently formulated, would be extremely dangerous in a marine aquarium. Simply put the Damsel fish into the tank as soon as the nitrite reading falls to zero (= use "Seamature" to speed things up, or something like it) and feed rather heavily once each day until you go on holiday. While away, leave the tank lights on. The Damsel will be in perfect health on your return.

Tropical Floundering!

I recently bought a Freshwater Flounder but can find no information at all in any of my books. Can you help? My specimen appears to enjoy algae!

The Freshwater Flounder is *Platichthys flesus* which, like all the Flounders, is a marine fish. However, this European fish will swim up estuaries and live in fresh water, but it has to return to the sea to breed. So you will not spawn the fish in

your aquarium.

In the wild, it feeds on molluscs, worms and crustacea, so feed a carnivorous diet. The apparent algae-eating is probably the fish's attempt to locate insects. *P. flesus* can grow to 20 inches and weigh over 5lb, so it is a popular anglers' fish; but it is only caught for sport, the flesh being soft and insipid.

The fish is not considered an ornamental species. That is why no information will be found in petfish books. In an aquarium it will remain small, but an interesting addition... let us know how it progresses.

"Flying" fish

I am shortly being posted home to England and would like to take my fish with me. The journey will take between 24-36 hours in total. How do I go about tackling this job?

To import fish into England you will need a fish import licence obtainable from the Ministry of Agriculture, Fisheries and Food, Great Westminster House, Horse Ferry Road, London SW1P 2AE.

Pack the fish in polybags with the aquarium water and lots of air trapped by an elastic band around the top. Better still, use oxygen if available at your local aquarium shop. Pack the plants and decorations in the same way. Gravel can be transferred to a bucket, and equipment into a packing case in the usual way.

Put the polybags of fish into polystyrene boxes to maintain temperature. These are used to bring fish home from the Far East, so they work well. They are available from petfish dealers.

Move only the empty tank and, on arrival, check for leaks before refurbishing. If there are any, dry them well and smear silicone sealer around the inside joints. Transfer the fish to a temporary home (baby bath, polythene-lined box, etc.) for 24 hours, while the sealer sets.

FRED THE PIRANHA.

IT'S A TOUGH LIFE BEING A PIRANHA!



YOU'VE GOT TO BE TOUGH, RUTHLESS AND PHYSICALLY FIT.



ALL THAT CRASHING OF TEETH ALL DAY REALLY TAKES IT OUT OF YOU.



BY PETER MCGEEGH.

STILL, THE MEALS ARE QUITE GOOD!



ABERDARE
Zambesi Tropicals
 44 Commercial Street, Aberdare.
 Tel: 0685 884268 or 884266. Early
 closing day Monday. C/T/M/P/
 AA/B/R&A.

AVON
Aquastore
 542 Filton Avenue, Filton, Bristol
 BS7 0QG. Telephone: (0272)
 692345. Open: Mon-Sat, 10a.m.-
 6p.m. Late Night: Thursday until
 8p.m. R/T/M/C/P/AA/B.
Kingfish
 3A Meadow Street, Avonmouth,
 Bristol, Avon. Telephone: (0272)
 824973. Open: Mon, Wed, Fri,
 Sat, 9a.m.-5.30p.m. Thurs: 9a.m.-
 8p.m. Closed Tue & Sun. WR/C/
 T/M/P/AA/B.

BEDFORDSHIRE
A1 Aquatics
 58A The High Street, Biggleswade,
 Bedfordshire. Telephone: (0767)
 318436. Mon, Tues, Wed, 10a.m.-
 6p.m. Thurs, Fri, Sat, 9a.m.-5.30
 p.m. Sun 10a.m.-4p.m. W/R/C/
 T/M/P/AA/B.

Mr Fish
 90-92 Broomham Road,
 Bedford (Main A428
 Bedford to Northampton
 Road)
 Telephone: 0234 59333
 Mon., Tues., Thurs.,
 10.30a.m.-7p.m.
 Wed., Fri., 10.30a.m.-9p.m.
 Sat., 9.30a.m.-6p.m.
 Sun., 10.30a.m.-5p.m.
 R/C/T/M/P/AA/B.

BERKSHIRE
Bracknell Aquarium
 Unit D, Humphreys Yard, Bagshot
 Road, Berkshire. Telephone: (0344)
 424146. T/R&A.

Maidenhead Aquatic Centre
 52-56 King St., Maidenhead,
 Berkshire.
 Telephone: (0628) 782774. Open
 Tues-Sat 10a.m.-6p.m.
 Sun: 11a.m.-5p.m.
 Installation and maintenance
 service, Visa and Access.
 R/C/M/T/P/AA/B.

Finchampsted Water Gardens
 (40 yds below Queen's Oaks Public
 House)
 52-56 King St., Maidenhead,
 Berkshire.
 Telephone: (0628) 782774. Open
 Tues-Sat 10a.m.-6p.m.
 Sun: 11a.m.-5p.m.
 Installation and maintenance
 service, Visa and Access.
 R/C/M/T/P/AA/B.

Thames View Aquarium
 62 Eton Wick Road,
 Eton Wick, Windsor
 Telephone: Windsor 860028
 Tues, Wed, Fri,
 10a.m.-7.30p.m.
 Thurs, 2p.m.-7.30p.m.
 Sat, Sun, 10a.m.-5.30p.m.
 Closed all day Monday
 R/C/T/P/AA/B.

BIRMINGHAM
Tropical Waters Aquatics
 1161 Warwick Road, Acocks Green,
 Birmingham. Opening hours: Mon,
 10a.m.-5.30p.m. Tues, 10a.m.-
 5.30p.m. Wed, closed. Thurs,
 10a.m.-5.30p.m. Fri, 10a.m.-
 5.30p.m. Sat, 9a.m.-5.30p.m. Sun,
 closed. Specialist aquatics. Retail
 only.

BUYERS GUIDE

Forms for this section can be obtained from Gavin Swann, The Aquarist and Pondkeeper, 7 Commerce Parade, 39 Commercial Road, Paddock Wood, Tonbridge, Kent TN12 6EN. Telephone: (0692 83) 5544.

The firms listed are wholesalers or retailers or both in fishes, tanks, plants, appliances and accessories, reptiles and amphibians. Abbreviations: W Wholesale only. R Retail only. WR Wholesale and retail. C Coldwater. T Tropical. M Marine. P Plants. AA Appliances and accessories. B Books. R & A Reptiles and amphibians. ECD Early closing day.

BUCKINGHAMSHIRE
Deanfield Aquatics
 Deanfield off Haw Lane off A4010,
 Saunderton, Near High Wycombe.
 Telephone: (024027) 224. 10 a.m.-
 5.30 p.m. W/C/T/P/AA/B.

Desborough Aquaria
 12/13 Oxford Road (on main
 A40), High Wycombe. Tele-
 phone: High Wycombe 35881.
 Hours: Mon., Tues., Thurs.,
 Fri., Sat., 9 a.m.-5.30 p.m.,
 Wed., 9 a.m.-1 p.m. Closed
 Sunday. R/C/T/P/AA/B.

Risborough Aquarium
 9 Duke Street, Princes Ris-
 borough, Bucks HP17 0AT.
 Reptile & Amphibian Special-
 ists. Currently expanding mar-
 ine section. Open Tues to Sat,
 10a.m.-5.30p.m. Sunday 1-
 5p.m. Closed all day Monday.
 Telephone: (084-44) 4279.
 R/C/T/M/P/AA/B/R&A.

THE FISH HOUSE
 18 Watling St (A5), Penny
 Stratford, Milton Keynes.
 Tel: 0908 77336
 Extensive selection at competitive
 prices. Regular worldwide shipments
 of fish and plants.
 Open Mon-Sat, 10 a.m.-4 p.m.
 Sun & Bank Holidays 10 a.m.-4 p.m.

The Waterlife Studio
 Booker Garden centre, Clay Lane,
 Booker, Nr. Marlow, Bucks SL7
 3DH. Telephone: (0494) 26865.
 Open 7 days a week. Mon. to Sat.,
 8.30 a.m.-6 p.m. Sun., 9.30 a.m.-6
 p.m. WR/C/T/P/AA/B.

CAMBRIDGESHIRE
**Alvencor Aquatics &
 Water Garden**
 Murrow, Nr. Wisbech, Cambs.
 Everything for the fishkeeping
 hobbyist. Barclaycard & Access.
 Open Tues-Sun, 9a.m.-5p.m. win-
 ter; 9a.m.-6p.m. Sunday. Closed
 Monday. R/T/R/C/W/AA/P/B.

FISHES GALORE
 Free Church Passage,
 St. Ives, Cambs.
 Telephone: 0480 68809
Reptiles and Amphibia
 Hours: Mon, Tues, Wed, Fri, Sat
 9am-6pm. Thurs 9am-1pm. Closed Sun.
 Access and Visa
 R/C/T/M/P/AA/B.



CHESHIRE
Congleton Water World
 Foundry Bank (nr Leisure Centre),
 Congleton. Telephone: (0260)
 272645. Tropical, marine, cold-
 water, ponds and equipment. Mon,
 Tue, Thur 10a.m.-8p.m. Wed, Fri,
 Sat, Sun 10a.m.-5p.m. WR/C/T/
 M/P/AA/B.

Limestar Tropicals
 61 High Street, Tarvin, Chester.
 Telephone: Tarvin (0829) 40333.
 Tuesday 6.30p.m.-9p.m. Thursday
 & Friday 2p.m.-5p.m., 6.30p.m.-
 9p.m. Saturday 10a.m.-5.30p.m.
 Sunday 2p.m.-5.30p.m. R/C/T/
 M/P/AA/B/R&A.

Stapeley Water Garden
 London Road, Stapeley, Nantwich.
 Telephone: (0270) 623888. Hours:
 10a.m.-5p.m. 7 days a week. WR/
 C/T/M/P/AA/B.

**Warrington Aquaria &
 Pet Centre**
 31 Lovely Lane, Warrington, Che-
 shire. Telephone: (0925) 30064.
 Open: Mon, Tue, Wed, Fri,
 9.30a.m.-5.45p.m. Thurs, 2p.m.-
 8p.m. Sat, 9.30a.m.-5.30p.m. R/C/
 T/M/P/AA/B/R&A.

UNIVERSAL WATERLIFE
 Aquatic Superstore
 Need we say more!

UNIVERSAL WATERLIFE
 is Pilkington Garden Centre,
 Mill Lane, Bald Heath, Widnes, Che-
 shire. Tel. 095-424 8260. 1 mile from
 M62. Hours of Opening: 9a.m.-5p.m.

CLWYD
Rhyl Aquaria
 2 Abbey Street, Rhyl, Clwyd
 County LL18 1MY, North Wales.
 10a.m.-1p.m., 2-6p.m. 5 days a
 week. Closed Sundays, Thursdays.
 W/R/C/T/M/AA/P/B.

**TO ADVERTISE
 IN THIS SECTION
 CALL HAZEL PAYNE
 ON 01-353 4881**

CORNWALL
Garden Services
 Harrowbarrow, Callington. Tele-
 phone: (0579) 50438. Open: 7 days
 a week. 10a.m.-5p.m. Help and
 advice freely given. R/C/T/P/
 AA/B.

Deepools
 Manufacturers of fibre glass ponds.
 For information phone (0726)
 63939. WR. Pengover Road, Lis-
 keard, Cornwall. Telephone: 0579
 42278. Open 7 days a week, 9a.m.-
 1p.m., 2p.m.-6p.m. Specialists in
 ponds, pumps and lighting equip-
 ment and stock held of all aquatic
 supplies. R/C/T/P/AA/B.

CUMBRIA
Lakeland Koi
 Hampfell Road, Grangeover
 Sands, Cumbria. Telephone:
 (04484) 2971. Open 10a.m.-5p.m.
 Mon-Sat. Specialist in Koi carp.
 R/C/T/P/AA/B.

DERBYSHIRE
International Aquatic Centre
 126-128 West Bar, Sheffield. Tele-
 phone: 0742 750147. Open seven
 days a week, 9.30a.m.-5p.m.
 R. C.T.M.P.A.A.B.

DEVON
Teign Tropicals
 143 Queen Street,
 Newton Abbot,
 Devon TQ12 2BN
 Telephone: 0626 60588
 Open 7 days a week
 Mon, Tue, Wed, Thur, Sat,
 9.30am-5.30pm
 Fri, 9.30am-8.00pm
 Sun, 10.00am-4.00pm
 Specialists in Tropical,
 Freshwater, Marine and
 Coldwater Fish and
 Equipment
 Visa Access
 American Express
 R/C/T/M/P/AA/B.

Countryman
 24-26 Hyde Road, Paignton,
 Devon. Mon-Sat 9a.m.-5.30p.m.
 Tel: (0803) 557061. R/C/T/M/P/
 AA/B.

Devon Tropicals
150 Union Street, Plymouth. Telephone: 28158. Open all week, 10a.m.-6p.m. R/C/T/M/P/AA/B.

Emperor Tropicals
Sterrh Road, Manadon, Plymouth. Telephone: (0752) 706633. Late night Thur, Fri, until 7p.m. R/C/T/M/P/AA/B.

Exeter Aquatics
2 Shaftesbury Road, St. Thomas, Exeter. Telephone: 219521. Monday-Saturday 9.30a.m.-6p.m. Late night Friday. Closed Sunday. R/C/T/P/AA/B.

Penn Hill Nurseries
Dunshidesck, Exeter, Devon EX2 9CY. Open 7 days a week 9a.m.-7p.m. inc. Bank Holidays. R/C/P/AA.

DORSET

Amazon Aquatics
at Becroft Nurseries, Queen Anne Drive, Merley, Nr. Wimborne. Telephone: (0202) 600643. Largest purpose-built fish house in Dorset. Open 7 days a week. Mon-Sun, 10a.m.-6p.m. WR/C/T/P/AA/B.

Tropical and Marine Fish Centre
56-58 Kinson Road, Wallingdown, Bournemouth. Telephone: (0202) 528021. Closed all day Monday. Tuesday to Saturday 10a.m.-6p.m. Sunday 10a.m.-1p.m. WR/C/T/M/P/AA/B.

The Aquatic Centre
Van Duke Garden Centre, Wimborne Road West, Stapehill, Wimborne, Dorset. Open 7 days a week 10am-6pm. Quality Japanese Koi and coldwater fancys. Telephone: 0202 892844.

ESSEX

Colchester Aquatics
18 Crouch Street, Colchester, Essex. Telephone: 0206 540038. Open: Mon-Fri, 9.30a.m.-6p.m. Sat, 9.30a.m.-5p.m. Specialists in tropical, marine and coldwater fish. R/C/T/M/P/AA/B.

The Fishy Business
148 London Road, Southend on Sea SS1 1PH (few mins. from Victoria stn) Telephone: (0702) 330123
Open: Mon. to Sat., 10a.m.-6p.m.
Sun., 10a.m.-4p.m.
Specialising in Tropical fish. Many unusual and exotic species. R/C/T/P/AA/B.

Langleys Aquatics
Langleys Farm, Nr. White Roding, Gr. Dunmow, Essex. Telephone: (0279 76) 245. 10a.m.-5.30p.m., closed Thurs. Specialising in Japanese Koi & all pond equipment. 2 acres of gardens. Free catalogue. R/C/T/AA/B.

Langleys Wholesale Supplies Ltd
Langleys Farm, Nr. White Roding, Gr. Dunmow, Essex. Telephone: (0279 76) 245. 10a.m.-5.30p.m., Mon-Sat. Koi and Koi equipment specialists. Free catalogue. W/C/T/AA/B.

Skilton, C. J., Aquarist
Great Gibcracks Chase, Butts Green, Sandon, Chelmsford CM2 7TR. Telephone: Chelmsford (0245) 400535/400252. Monday to Friday 9a.m.-5.30p.m. by appointment only: Monday evenings 5.30-8.30p.m. and Saturday 10.30a.m.-12 noon. W/C/AA/B/R&A.

H. Tisbury & Son
Specialist for Pond and Quality Fancy Goldfish
Spice Pitts Farm, Church Road, Noak Hill, Romford, Essex. Telephone: (04023) 41376. Opening 7 days a week. 10a.m.-5p.m.

Swallow Aquatic & Water Garden Centre
London Road, Rayleigh, Essex. Telephone: 0268 761265 or 0268 775099. Open: 9a.m.-6p.m. seven days a week. WR/C/T/M/P/AA/B.

WetPets
SWEDISH BUTYL POND LINERS
"POND PUMPS" EHEIM POWER FILTERS. TUNZE SPECIALISTS.
LIVE FOOD.
71 Victoria Road, Romford.
Telephone: Romford (0708) 44880
Open Mon-Sat
10am-6.30pm
Credit facilities available
R. C.T.M.A.A.B.F.

SOUTH GLAMORGAN

The Riverside Aquatic (Kerrison Animal Health)
1 Leckwith Road, Canton, Cardiff, South Glamorgan. Telephone: (0222) 394733. Open: Mon & Tue, 9a.m.-5.30p.m. Wed & Thurs, 9a.m.-6.30p.m. Fri, 9p.m.-8p.m. Sat, 9a.m.-5.30p.m. Sun, 11a.m.-4p.m. Probably the most up-to-date marine systems in the world.

Mr. J. Arnold (Top Pets)
34/36 Briton Ferry Road, Neath, Nr. Stockans Corner
Telephone: 2227
Hours: 9a.m.-5.30p.m. daily
Late night opening Thurs. and Fri. 6.30p.m.-7.30p.m.
Sunday Morning 10a.m.-1p.m.
R. C.T.P.A.A.B.

GLASGOW

M & R Dogfish
466 Paisley Road West, Glasgow. Scotland's oldest established aquatic retailer. Telephone: 041-427 3615. Open: Mon-Sat, 9.30a.m.-5.30p.m. (Closed Tues). Sun, 11a.m.-4p.m.

GLOUCESTERSHIRE

Barrier Reef
Stratton Road, Gloucester. Telephone: 0452 305396; and 38 High Street, Cheltenham. Telephone: 0242 238638. Open: Mon-Sat, 9.30a.m.-5.30p.m. Sun, 10.30a.m.-4.20p.m. Access & Visa welcome. R/C/T/M/P/AA/B/R&A.

GWENT

Top Trop Aquatics
123 Caerlon Road, Newport. Telephone: (0633) 54496. Open 9a.m.-5.30p.m. Monday to Saturday. R/C/T/M/P/AA/B.

HAMPSHIRE

Arundel Aviaries & Fisheries (Taylors) Ltd
313/315 Arundel Street, Portsmouth
Telephone: Portsmouth 820047
Mon-Sat, 9a.m.-6p.m.
Wed, 9a.m.-1p.m.
Est. over 50 years
R/C/T/P/AA/R&A/M.

Boscombe Aquatics, Southampton
27/29 Queensway, Southampton
Telephone: (0794) 37351
and
Romsey Water Gardens
93 Great Bridge Road
Telephone: 0794 515923
R/C/T/M/P/AA/B.

Creature Comforts & Aquatic Centre
15 Ringwood Road, Totton, Southampton. Telephone: 0703 868529. Open: 9a.m.-6p.m. Mon, Tue, Thurs, Fri, 9a.m.-5p.m. Sat. Closed Weds & Sun. R/C/T/M/P/AA/B.

Culver Aquatics
7 Elmwood Parade, Elmwood Way, Winklebury, Basingstoke. Telephone: (0256) 461123. Mon, 1p.m.-6p.m. Tues.-Thurs., 9a.m.-6p.m. Sat., 10a.m.-6p.m. Sun., 9a.m.-12 noon. R/T/M/P/AA/B.

Fareham Pet 'N' Fish Centre
140 West Street, Fareham, Hampshire PO16 0EL. Telephone: 0329 233945. Open: Mon-Sat, 9a.m.-5.30p.m. All aquatic and pet equipment. Send S.A.E. for complete stock list. Visa and Access welcome. R/T/C/P/B/AA.

LYNCHFORD AQUATICS
46 Peabody Road, Farnborough, Hants
Telephone: 0753 542951
200 tanks, mini-reef and marine and invertebrate system.
R/C/T/M/B/P/AA.

Petersfield Aquarium
Petersham Nurseries, 5c Charles Street, Petersfield. Telephone: (0730) 68363. Open 9a.m.-5.30p.m. 5 days a week. 9a.m.-6.30p.m. Friday. Closed Thursday. R/C/T/M/P/AA/B.

HERTS.

Bubbles Aquaria & Pets
92 Broadwater Crescent, Stevenage, Hertfordshire. Telephone: (0438) 316787. Open 9.30a.m.-8p.m. Mon-Fri, 10a.m.-6p.m. Sat, 10a.m.-2p.m. Sun. Bubble your pleasure at Bubbles Aquaria. WR/C/T/R/M/P/AA/B/R&A.

**TO ADVERTISE
IN THIS SECTION
CALL HAZEL PAYNE
ON 01-353 4881**

HUMBERSIDE

KRC
4 Astral Road, Booths, Nr. Hull, North Humberside
Approx. 1 mile from Humber bridge
Largest Marine retailer in the North and over 300 species of Tropical.
Telephone: (0402) 660129
Please ring for directions and wholesale enquiries.
Open Tues, Wed, Sat, 10a.m.-6p.m. Thurs, Fri, 10a.m.-6p.m. Closed Sun, Mon.

KENT

C 'N' C Pet Stores
97 High Street, Strood, Kent
Over 100 tanks
Open Mon-Sat 9.00am-5.30pm
C/T/M/AA/B/RA.

Cramphorns Garden Centre
Oakley Road, Keston, Bromley, Kent. Telephone: (0689) 62655. Open 9a.m.-5.30p.m. 7 days a week. R/C/T/M/P/AA/B.

Field Aquatic Nursery
Woodview, Island Road, Hersden, Canterbury. On A28 next to HGV Test Station. Telephone: Canterbury 711163. Open Mon, Tue, Sat, Sun, 11a.m.-6p.m. Thur, Fri, 11a.m.-6p.m. Wed, 1p.m.-6p.m. R/C/T/P/AA/B.

Kent Koi Ko
The London Koi Centre adjacent Polhill Garden Centre, London Road, Badgers Mount, Sevenoaks. EXCLUSIVE SPECIALISTS IN KOI. Telephone: 0959 33567. 10 a.m.-6 p.m. seven days a week. WR/AA/B.

Kingfisheries Aquarium Ltd
308 Croydon Road, Beckenham BR3 4HR. Telephone: 01-650 3716. Closed Sun, Mon, Tues, Wed, Thur, 9.30a.m.-5.30p.m. Fri., Sat., 9.30a.m.-6p.m. Closed Sun. R/C/T/M/P/AA/B.

The Pet Shop of Petts Wood
121/123 Queensway, Petts Wood, Kent. Telephone: Orpington (0689) 25543. Mon, Tues, Thurs, Sat, 9a.m.-5.30p.m. Wed, 9a.m.-1.00p.m. Late night Fri, 9a.m.-7p.m. Closed Sun. R/C/T/P/AA/B/R&A.

Tropical & Coldwater Fish
252 Sherwood Park Avenue, Sidcup, Kent DA15 9JN. Open 9a.m.-5.30p.m. Mon-Sat. Ec. Thursday. R/C/T/P/AA/B.

World of Koi
Bencroft Farm, Oakley Road, Broomley, Kent. Telephone: 01-462 9479. Open 7 days a week 10a.m.-6p.m. Viewing Sundays. WR/C/AA/B.

LANCASHIRE

Aquascope
Quality House, Waveridge St., Behind Police Station, Great Harwood BB6 7LR
Telephone: (0254) 884833
Mon, 11.30a.m.-6p.m.
Tues, 9.30a.m.-6p.m.
Thurs, 9.30a.m.-8p.m.
Fri, 9.30am-7p.m.
Sat, 9.30a.m.-5.30p.m.
Sun, 11.30a.m.-5.30p.m.
Closed Wednesday
40ft plant cascade, super selection of marine in centralised system.
Mini reef and tunze stockist.
Garden pool liners, equipment.
Walk round showroom, large car park.

Darwen Aquarium Centre
65-67 Duckworth Street (main road), Darwen. Telephone: (0254) 779661. Mon-Fri, 10a.m.-6p.m. Sat, 10a.m.-5p.m. Sun, 12noon-4p.m. Parrots, Foreign Finches, etc. in stock. WR/C/T/P/AA/B.

Llanberis Aquatics
194-196 Blackburn Road (near old Grammar School), Accrington, Lancashire. Telephone: 0254 35435. Open: Mon, Tue, Thurs, Fri, 9.30a.m.-6p.m. Sat, 9.30a.m.-5.30p.m. Sun, 10.30a.m.-4p.m. Closed Wed. Tropical fish, fancy fish, coldwater fish, marine and plants. Invertebrates + wide selection of ponds, liners, pond fish, Mini reef + tanks.

Lilliput Aquarium (Bolton) Ltd.
170 Chorley Old Road, Bolton BL1 3BA. Telephone: 0204 407631. Importers of tropical fish and plants, Japanese coldwater fish. Also a superb marine selection. Open Monday to Saturday 9.30-5.30. Sunday 11-4.30. WR/C/T/M/P/AA/B.

LEICESTERSHIRE
Hugglescote Aquatics
2 North Avenue, Hugglescote, Coswile, Leicester LE5 2QG. Telephone: (0530) 812448. Leicestershire's premier discount store. All glass tanks 36 x 15 x 12 are now £11.25. Access and Visa. Mon, Tues, Thur, 11a.m.-6p.m. Wed, 2p.m.-6p.m. Fri, 11a.m.-7.30 p.m. Sat, Sun, 11a.m.-4p.m. WR/C/T/M/P/AA/B/R&A.

LINCOLNSHIRE
Riversdale Fish Farm
Firsby Road, Halton Holgate, Spilsby (Nr. Skegness), Lincs. Telephone: 0790 52410. Open: 10a.m.-8p.m. six days week. Closed Tues. R/C/T/M/P/AA/B/R&A.

LONDON (East)
AQUA IMPORTS
28 Beconfield Road, London E17 Access Tel: 81-521 4184. Barclaycard Direct importers of tropical, marine and coldwater fish, plants and accessories. One of the largest sections of freshwater and marine fish. Any size tank made at competitive prices. Open Mon-Wed 11a.m.-4.30p.m. Thur-Fri 11a.m.-6p.m. Sat 11a.m.-4.30p.m. Sun 11a.m.-4p.m.

Finworld
744 Barking Road, Plimston, London E13. Telephone: 01-552 1399. Open: Mon, Tues, Thurs, 9.30a.m.-6p.m. Fri, 9.30a.m.-8p.m. Sat, 9.30a.m.-6p.m. Sun, 10a.m.-2p.m. Closed Wed. R/C/M/AA/P/B/T. Wholesale Tropicals 220 Bethnal Green Road, E2. Telephone: 01-739 5356. Early Closing Day Thursday. WR/C/T/P/AA.

LONDON (North)
Exotic Fish
135 High Road, New Southgate, London N11 1PP. Telephone: 01-361 2782. Open 10a.m.-6p.m. all week. Specialists in rare cichlids, catfish, invert set ups. Distributor of Hockney tanks. Very competitive prices on all glass tanks. R/C/T/M/P/AA/B.

Highgate Aquarist
357a Archway Road, Highgate, London N6 3EJ. Telephone: 01-349 7766. Hours: Tues to Fri, 10a.m.-7p.m. Sat, 10a.m.-6p.m. Closed Sun, Mon. WR/C/T/P/AA/B.

LONDON (South)
Aquazoo Ltd
Unit 332, Elephant & Castle Shopping Centre, London SE1. Telephone: 01-705 4669. Open 11a.m.-5.30p.m. every day except Monday.

R D & G Pets & Hobbies Ltd.
315c Baring Road, Grove Park, SE12. Telephone: 01-857 7666. Mon, Tues, Wed, 10a.m.-6p.m. Fri, 9p.m.-6p.m. Sat, 9p.m.-5.30p.m. Sun, 10a.m.-2p.m. R/C/T/M/P/AA/B.

LONDON (South West)
St. Johns Aquaria
140 St. Johns Hill, Battersea, London SW11. Telephone: 01-874 5082. Open: Mon-Fri, 10a.m.-6p.m. Exc. Weds Sat, 9a.m.-6p.m. R/C/T/M/P/AA/B.

Tropicals and Marines (Marine Specialist)
71 Lower Richmond Road, Mortlake SW14. Telephone: 01-876 5463. Tues-Thurs, 10a.m.-6p.m. Fri, 10a.m.-7p.m. Sat, 9a.m.-5.30p.m. Sun, 10a.m.-4p.m. Closed Monday. R/C/T/M/P/AA.

LONDON (West)
Queensborough Aquarium & Pets
111 Goldhawk Road, Shepherd's Bush, London W12 8JJ. Telephone: 01-743 2730. Closed all day Thursday. R/C/T/M/P/AA/B.

MERTHYR TYDFIL
Dowlais Pet Shop
2 Plant Road, Dowlais, Merthyr Tydfil. Telephone: (0685) 82920. Open 9a.m.-5p.m. 6 days a week. Open late Thursday until 8p.m. R/C/T/P/AA/B.

MIDDLESEX
Ashford Aquatics
Vermeulen Heathrow Garden Centre, Horton Road, Stanwell. Telephone: Staines 63830. Open 7 days a week 9.30a.m.-5.30p.m. R/C/T/M/P/AA/B.

Eastcote Aquaria
Vast selection of fish, plants and accessories. IN FACT ALL THE AQUARIST & PET OWNER NEEDS SUPPLIED ON THE SAME HYGIENICALLY SPACIOUS PREMISES. 142 Field End Road, Eastcote, Pinner, Middlesex. 3 mins. walk from Eastcote tube. Telephone: 01-868 2480. Hours: Mon, Tues, Thurs, Sat, 10a.m.-6p.m. Fri, 10a.m.-7p.m. Sun, 10a.m.-6p.m. Closed Wed. R/C/T/M/P/AA.

Home Marine Ltd.
Hardy Plant Farm, Theobalds Park Road, Enfield. Telephone: 01-367 4191. Open 7 days a week. R/C/T/M/P/AA/B/R&A.

Queensborough Fish Farm
Ferry Lane, Hythe End, Wraybury, Nr. Staines. Telephone: Wraybury 2885. Monday to Friday 10a.m.-5.30p.m. Saturday and Sunday 10a.m.-6p.m. WR/C/T/P/AA.

Se Aquariums Waterlife Centre & "Sansul" Public Aquarium & Japanese Garden
476 Bath Road, Longford, Heathrow. Telephone: 0753 682887. Telex: 847777 Telex Answerback "Electric Ray" Open 7 days a week 10a.m.-6p.m. WR/C/T/M/P/AA/B.

MIDLANDS (West)
Hollybush Aquatics
Hollybush Garden Centre,
Warstone Road, Shreshill, Wolverhampton. Telephone: 0922 418050. Mon-Sat 9a.m.-5p.m. Sun 10a.m.-5p.m. R/C/T/M/P/AA/B.

Lebsurmatic
107 Grove Lane, Harborne, Birmingham. Telephone: 021-426 2142. Large selection of tropical, marines and coldwater fish. Aquarium plants, accessories and food. Open Mon-Sat, 9a.m.-6p.m. Sun, 10.30a.m.-12.30p.m.

Shirley Aquatics Ltd
Stratford Road, Shirley, Solihull, West Midlands B90 4EF. Telephone: 021-744 1300 or 021-745 9387. Open: Mon and Fri, 9a.m.-8p.m. Tue, Wed, Thurs, Sat, Sun, 9a.m.-6p.m. The Midlands largest aquatic centre. WR/C/T/M/P/AA/B.

NORFOLK
Waveney Fish Farm Water Garden
Aquarium and Aviary Centre, Park Road, Diss, Norfolk. Telephone: 0179 2697. Open: 7 days a week. WR/C/T/P/AA/B/R&A/E/C/D.

NORTHAMPTONSHIRE
DANNY HOWITT
Home & Garden Village, 291 Rockingham Road, Corby, Northants. Telephone: Corby (0536) 62078. Nr. Rockingham Castle. Quarantined healthy tropical, coldwater fish, plants, accessories. Friendly service. Open 7 days a week.

Wellingborough Aquatics
12A Strode Road, Wellingborough (off Mill Road), Northants. Telephone: (0933) 228511. Open: Mon, Tue, Wed, Sat, 10a.m.-6p.m. Thurs, 2p.m.-6p.m. Fri, 10a.m.-7p.m. Sun, 2p.m.-5.30p.m. R/C/T/M/P/AA/B.

PERFECT PETS AND AQUATICS
Piscaria Garden Centre, Carlton Lane, Lambeth, S.W. Telephone: 0802 262845. Tropical, marine, invertebrates, plants, husband books and all aquarium accessories. - always a welcome. ACCOUNTS AVAILABLE (with FIDELITY EXCEPT WEL).

OXFORDSHIRE
The Goldfish Bowl
118-122 Magdalen Road, Oxford. Telephone: Oxford (0865) 241825. Mon-Thurs, 10.30a.m.-5.30p.m. Friday, 10.30a.m.-8p.m. Saturday, 9a.m.-5.30p.m. Closed on Sunday. R/C/T/M/P/AA/B.

SHROPSHIRE
Shrewsbury Aquatics
Specialising in Catfish. The Victorian Shopping Arcade, Shrewsbury. Telephone: (0743) 69423. Mon-Thurs, 10a.m.-5.45p.m. Fri-Sat, 9a.m.-5.45p.m. R/C/T/M/AA.

SOMERSET
J. & K Aquatics Ltd.
The Old Stable, Wellington Gardens Centre, Wellington, Somerset TA21 8RA. Telephone: Wellington 7077. WR/C/T/M/P/AA/B/R&A.

West Country Aquatics
85 Station Road, Taunton, Somerset. Telephone: Taunton 81021. Mon-Thurs, 10a.m.-6p.m. Fri, 10a.m.-7.30p.m. Sat, 9.30a.m.-5.30p.m. Sun, 11a.m.-4.30p.m. Open EVERY DAY except Christmas and New Year. R/C/T/M/P/AA/B/R&A.

SURREY
AQUAZOO LTD
1058 Whitgift Centre, Croydon, Surrey. Telephone: 01-688 1298. Croydon's number one aquarium for the best stock of healthy tropical, coldwater and marine fish. Open 7 days 10a.m.-5.30p.m.

Egmont Water Garden Centre
132 Tolworth Rise South, Surbiton. Telephone: 01-337 9605. Specialists in coldwater fish and pond construction and design. Open 6 days a week, 10a.m.-6p.m. Closed Monday. R/C/M/P/AA/B.

DORKING AQUATICS & BIRDS
8 West Street, Dorking, Surrey RH4 1BL. Telephone: (0306) 803997. For tropical and coldwater fish, plants and all accessories. Marine fish and invertebrates. All aquatic equipment.

Marks Water Garden Centre
Petersham Nurseries
Petersham Road, Richmond, Surrey. Telephone: 01-940 1495. Open 6 days a week. Closed Monday. R/C/P/AA/B.

SUSSEX
Aquascope
Aquarium & Exotic Fish Specialists, 31 Balfour Road, Preston Village, Brighton BN1 6NB. Telephone: 0273 505331. Open: Mon-Sat, 10a.m.-6p.m. Easy Parking. **Sussex Koi & Bird Centre**
Locksacre Aquatic Nursery, Wopwams Lane, Birdham, Chichester PO20 7BS. Telephone: (0234) 512472. Mrs. Parnell. Open Tues-Sun inclusive, 9.30a.m.-5.30p.m. R/C/T/M/P/AA/B.

Aquarist & Pondkeeper Magazine
58 Fleet Street (entrance 3 Pleydell St.) London EC4Y 1JU

WILTSHIRE

FIC AQUATICS
Falcon House, Oxford Road,
Calne, Wiltshire
Telephone: Calne (0249) 812560
For the best selection of
coldwater, tropical and marine
fish and all aquatic supplies.
Open Every Day until 7pm

Finebush Tropicals
23A Devizes Road, Swindon,
Wiltshire. Telephone: 0793
30971. Open: Mon, 9a.m.-5p.m.
Tue-Sat, 9a.m.-7.30p.m. Sun,
11a.m.-5p.m.

Old Forge Tropicals
12/13 Eastcourt Street, Devizes.
Telephone: Devizes (0580) 5851.
Open Mon, Tues, Wed, 3p.m.-
6p.m. Thur, 3p.m.-8p.m. Fri,
5p.m.-8p.m. Sat, 9.30a.m.-5p.m.
Sun, 2p.m.-5p.m. R/C/T/M/P/AA/B.

WORCESTERSHIRE

Golds Aquatics and Nurseries
Rushford, Salford Priors, Evesham,
Worce. Telephone: Evesham (0186)
870600. Open 7 days a week. R/C/
T/P/AA/B.

YORKSHIRE

Cold Stream Koi Company
Leeds Koi Specialists. Most sizes
available. All accessories. Personal
service given. 32 South View Ter-
race, Yeadon, Leeds. Telephone:
(0532) 508369.

**Highfield Nurseries
& Aquatic Centre**

Whitley Bridge, nr Goole, Yorks.
Telephone: Whitley Bridge 661382.
NEW! Now in stock coldwater
aquarium fish including FANCY
varieties from China. Fee your
coldwater fish and all accessories.
Open every day 9a.m.-6p.m.

Aquatica
57 Brook Street, Wakefield (oppo-
site market). Telephone: (0924)
384473. North's leading discus spe-
cialist. Early closing day Wednes-
day. Please phone for opening
hours. R/T/C/M/P/AA/B.

The Coral Reef
Clock Cinema Buildings, Roundhay
Road, Leeds. Telephone: (0532)
401681. Specialists in Quality
Marine Fish and Inverts. Open:
Mon, Wed, Thur, 10a.m.-6.30p.m.
Fri, 10a.m.-8p.m. Sat, 10a.m.-
6p.m. Sun, 10a.m.-4p.m. Personal
attention given. R/T/C/P/AA/B.

**Barracough Fish
and Aquarium Supplies**
Hayfield Mills, Haycliff Lane,
Bradford BD5 9ET. Telephone:
(0274) 576241. Telex: 517722. Open
Mon-Sat, 9a.m.-5.30p.m. Incor-
porating 'King British' manufactur-
ers of: flake fish food, medication
and underwater treatment. WR/C/
T/M/P/AA/B/R&A.

T D AQUATICS
Duncan Crest Workshops, Hixley
Rd, Otley, West Yorkshire BS0007.
Please call for opening times. R/C/
T/P/AA/B.

WATERSCAPE

Steven H. Smith
Garden Centre, Pool Road,
Otley. Tel: (0943) 466449.
Open 7 days a week.
Catering for every conceivable
aquatic requirement with care
and quality.
R/C/T/M/P/AA/B.

Pisces Aquaria
Saga House, Illingworth Street,
Osset, W. Yorks. Telephone: 0924
264306. Open: Mon, 9.30a.m.-
5.30p.m. Tue, 9.30a.m.-8p.m. Wed,
closed. Thur, 9.30a.m.-8p.m. Fri,
9.30a.m.-8p.m. Sat, 9.30a.m.-
5.30p.m. Sun, 10a.m.-4p.m. R/C/
T/M/P/AA/B/R&A.

**Springfield Water Garden
Centre**
Burwick, Hull, Yorkshire HY12
9HA. Telephone: 0482 896770.

**Viscum Water Garden &
Aquatic Centre**
Doncaster Road, Barnburgh, Don-
caster. Telephone: 0709 493265.
Open: 10.30a.m.-7.30p.m. 7 days a
week. WR/C/T/P/AA/B/R&A.

**TO ADVERTISE
IN THIS SECTION
CALL HAZEL PAYNE
ON 01-353 4881**

Please send
all
advertising
copy to:
**Aquarist &
Pondkeeper,
Buckley
Press Ltd,
58 Fleet
Street,
(Entrance
3 Pleydell
Street)
London
EC4Y 1JU**

NORTH AVON

9th OPEN SHOW

AQUARIST "GOLD PIN"

AQUARIST

**SATURDAY
7th MAY 1988**
REFRESHMENTS ALL DAY
OPEN TO PUBLIC 2.30 p.m.

HANHAM FOLK CENTRE,
HIGH STREET, HANHAM,
BRISTOL BS15 3EJ
ADULT 30p
JUNIOR 10p
O.A.P. 10p

A really good 'buy'



**Price
£4.50**

(including postage
and packing)

*Keep those 'new look' copies of
'The Aquarist' in a smart 'new look'
binder.*

Obtainable from:
AQUARIST & PONDKEEPER
58 Fleet Street, (entrance 3 Pleydell Street),
London EC4Y 1JU.

CLASSIFIED

Norfine
NETS

AQUARIUM NETS
AVIARY NETS
CHILDREN'S NETS
GARDEN POND
NETS

For your aquarium, always
insist on a Norfine net
Trade Enquiries welcome Britain
Made

NORFINE NETS LTD
17 Wells Road, Fakenham, Norfolk NR21 8EG
Tel: 0328 6999 Telex: 97287 RADCOM G

Lineage 45p per word (minimum £5.40). Box numbers £1 extra. Semi-display Single: £9.00 per cm.
Prices quoted are for single column width 4.5 cm. Minimum depth 3 cm.
All advertisements should be addressed to: **Hazel Payne, The Aquarist and Pondkeeper,**
Buckley Press, 58 Fleet Street, Entrance 3 Pleydell Street, London EC4Y 1JU

NEW From Aquatronic . . . 
THE 'TIDY TIMER'
A CABLE TIDY WITH A DIFFERENCE

Get rid of those unsightly cables and plug-in timers. Use the tidy timer with its sophisticated electronic programmable timer, for your tank lighting with liquid crystal display, easy access cable ways, and positive cable securing.

Only **£29.50**

Twelve Months Guarantee

Send Cheque for the Order to:-
Aquatronic Products Ltd.,
1723 London Road,
Leigh-on-Sea,
Essex, SS92 SW

PLEASE ALLOW 14 DAYS FOR DELIVERY

STOP
PRESS!

CORYDORAS PANDA £15.00 EACH

DISCUS

GERMAN TANK BRED

1st Generation Schmidt-Focke, Red Turquoise,
Std. Turquoise and Cobalts.
Wild caught: Blues, Greens and Heckles.

CORYDORAS

Garbei, macropterus, harldswartzi, panda's,
prionotas, axerodi, steindachnen plus many other
varieties.

SYNODONTIS

Dhonti, petricola, robertsi, longirosterus,
angelicus, ornatipinis plus most other species.

We carry huge stocks of tropical fish and marine
inverts from most corners of the world plus a full
supporting range of plants and dry goods.

**10% OFF ALL JOHN ALLAN
HORIZON TANKS AND HOODS**

Monkfield Aquatics

THE CATTLE MARKET, CHERRY HINTON RD,
CAMBS. TEL: CAMB 211582

Bath Aquatic Supplies



For the best selection of Marine Fish in the West of England. All maintained in a centralised filtration system, and all fish are fully guaranteed. Also freshwater tropicals, coldwater and fancy goldfish and aquarium supplies.



Unit 5, Cotterell Court,
Monmouth Place,
Bath.

Telephone: Bath
(0225) 336813

(Just two minutes walk
from Charlotte Street
Car Park)

THE VIVARIUM



Britain's exclusive reptile and amphibian shop is now open in North East London where you can select from a wide range of healthy well fed reptiles and amphibians.

Our stock facilities are limited to top quality specimens. Captive-bred rather than new imports are our speciality and each specimen is given individual attention, thus ensuring proper care and regular feeding.

Raise high again your expectations

We are proud of the specimens we sell!
Visit us to compare our unique approach
with any other.

Open: Mon-Sat 10am-5.30pm
Manager: D. F. Manning

55 Boundary Road,
Walthamstow, London E17
Tel: 01-520 2072

GOLDFISH • KOI TROPICAL FISH

AQUAWORLD

High Quality tanks, all accessories for
tropical fish keeping

**PONDS, PUMPS AND FULL RANGE
OF WATER GARDEN SUPPLIES**

Individual attention, friendly service

BURGH HEATH

(0737) 355844

**BEST PRICES PAID FOR
ENGLISH BRED GOLDFISH
AND SHUBUNKINS**

Tel:

**TROPICAL MARINE
CENTRE LTD.**
01-207 1234

Lionhead Fisheries

Probably the highest
quality fancy goldfish
in the
South of England

BLACK ORANDAS, RED ORANDAS,
CALICO ORANDAS,
CHOCOLATE ORANDAS,
RED CAP ORANDAS,
BLUE ORANDAS, VEIL TAIL ORANDAS,
LIONHEADS, SCALED VEIL TAIL,
COLOURED VEIL TAIL,
RED FANTAILS, CALICO FANTAILS

English bred and reared young and adults
including showclass, rail delivery
available

TELEPHONE
01-764 9295
CROYDON

CLASSIFIED

TO ADVERTISE HERE: RING HAZEL PAYNE ON 01-353 4851

NORWOOD AQUARIUM LTD

London's Leading Wholesale Suppliers of Aquatic Equipment

Prompt and Reliable Service to Retailers

631 LIMPSFIELD ROAD, WARLINGHAM, SURREY CR3 9DY Upper Warlingham (08832) 5454

Members of the P.T.I.A.



**TROPICAL, MARINE
AND COLDWATER —**
We'll sell the lot . . .

We specialise in Marine Fish and Invertebrates and due to our stringent quarantine and conditioning we offer quality guarantee on all fish. Over 200 tanks of supreme quality fish, plants and invertebrate with a vast range of dried goods. Check out our complete system prices (which are complete). See our no-nonsense Bio-Pond Filter complete with medium for only £25. Complete installation, maintenance and consultation.

Mon-Fri 10am-8pm. Sat-Sun 10am-6pm

FOUNDRY BANK, (NEAR LEISURE CENTRE), CONGLETON,
CHESHIRE CW12 1DH. Tel: 0260 272645

Congleton Call in and see us
Water World **10% DISCOUNT**
If this coupon is brought to the shop



**HOBBY
FISH**

TROPICAL FISH AND WATER GARDEN CENTRE
Tropical Fish, Plants, Marines, Aquaria &
Accessories, Goldfish, Koi, Lilies, Marginals,
Pumps & Pools. All at very competitive prices.

HOBBY FISH FARM TOWCESTER ROAD (A5)
OLD STRATFORD, MILTON KEYNES TEL: 0908 542801

OCEAN PLATZ AQUARIUM

P.O. Box 2302, Lagos, Lagos, Nigeria
Phone: 665790, 884070, 880793
Telex: 20000 ATTV, 80X 528 APAPA

We are a major exporter of African
Tropical Freshwater Marine Water fishes.
Contact us for your small or large
orders at competitive prices.

FOR SALE

6' Minireef with base, complete
with plenty of rock, slabs, etc.
Excellent condition, only 6
months old. £600 ono. Buyer to
collect.

Tel. 0529 305704 office hours
or 0526 832849 after 6pm.



BOLTON KOI CO LTD

**SPECIALISTS IN
GOOD QUALITY KOI CARP**

8"-22" carefully selected.
All koi imported direct from Japan.
Most varieties available all year round at realistic prices up
to £1,000.
Thoroughly quarantined, swimming in sparkling clear water.
Also in stock, koi foods, nets, medications, books, filter
media, Zeolite, etc.
Helpful free advice at all times.

Write to us in a post! We'll return you our free illustrated
Open Weeks: Friday 11am-5pm, Saturday & Sunday 11am-5pm
156 CROMPTON WAY, BOLTON, LANCOS
TEL: 0204 387261



AQUAMANIA

PLUS
Tropical Fish and
Reptile Stockists

We have a wide range of tropical fish and reptiles, books, live
fish food and plants.

We also stock aquariums and equipment and provide a
full installation service.

**CONSULTANT HERPETOLOGIST
ALWAYS AVAILABLE FOR ADVICE**

Open Mondays to Saturdays 10.30-5.30

34 North Street, Clapham, London SW4.
Telephone: 01-498 0287.



HERMITAGE TROPICALS

The Hitchin
tropical fish centre
We also stock a variety
of small animals
and birds

60 Hermitage Road,
Hitchin, Hertfordshire.

Tel: Hitchin 34381
G. S. ADAMS, S. P. LAFFERTY,
J. G. ADAMS



**WATER GARDENS
STAPELEY —
EUROPE'S LARGEST**

WATER GARDEN CENTRE
offer you a *FREE* handbook containing
everything you need to know about Water
Gardening, including details on
Fountains, Plants, Waterfalls, Fish etc.
Just send two 1st class stamps to cover
packing and postage to:

STAPELEY WATER

GARDENS, Dept. APB

Stapeley, Nantwich, Cheshire.

Tel: 0270 628111

*Free to postal applicants only.
Personal callers welcome

**OPEN
7 DAYS
A WEEK**

BUTYL

POND LINERS FROM 150 IN P

ANY SIZE AVAILABLE

P.T.C. 150 IN P

Send for samples. Price

list & information

AGRI-FISH Dept. A

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

100, BURNLEY

GARDEN POND LINERS

BUTYL P.V.C. POLYTHENE

TOP QUALITY RANGE, PRODUCT GUARANTEES
FACTORY PRICES, FAST DELIVERY

Phone now: 0438 388311 Ext. 118

For FREE samples & literature pack, or send SAE to
POLYPOOL (DIRECT SALES) LTD

Dept. ADP, Unit 10, Claggy Road,

Kington, Herts SG4 9XX

CLASSIFIED

TO ADVERTISE HERE: RING HAZEL PAYNE ON 01-353 4581

HUDDERSFIELD The Home of Top Quality Tropical Fish

- Over 40 years as the North's leading aquatic centre.
- Over 250 varieties of the finest tropical fish available, always in stock, plus marines and coldwater fish.
- Thousands of plants kept in superb condition in our specially designed plant tanks.
- Tanks, hoods, stands and a multitude of accessories.
- Friendly helpful advice only available from the professionals.

B.T. Foden

AQUARIST

93 Thornhill Road, Longwood, Huddersfield
Telephone: 0484 655445

1 mile M62. Open 6 days closed Wednesday.

Wholesale enquiries welcome. Letterhead for drygoods — aquarium air supply catalogues and fish lists. Regular van and rail deliveries.

LANGLEYS WHOLESALE SUPPLIES LTD

Supplying to the trade, the full range of:

- Oase
- Hikari
- Tetra
- Waterlife
- Lotus
- Omega

as well as:

- Fittings
- Liners
- Nets
- Books
- Rena Airpumps
- Fibromix
- G4 Pondsealer
- Refresh
- Zeolite
- Schego Airpumps

AND MUCH MORE

Including fully quarantined and treated
Japanese Koi that has built

LANGLEY AQUATICS

A reputation for reliability

Langleys Farm, White Roding,
Dunmow, Essex

TELEPHONE: 027-976 245

Free catalogue available from the above address (trade only)



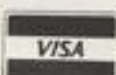
Bradgate Aquaria

Everything you need for ponds, coldwater,
tropical and marine fishkeeping.

Friendly and helpful advice always available.



Open 7 days a week — Come and visit us at
BRADGATE NURSERY
(Opposite Main Entrance to Bradgate Park)
BRADGATE ROAD, NEWTOWN, LINCOLN,
LEICESTERSHIRE
TELEPHONE: MARKET 0530 24508



AFRICAN CICHLIDS AND FRESHWATER TROPICALS

A superb collection,
also Plants and Food
STOKEFIELD
FARM



Nr. Pyrton, Watlington,
Oxford
Tel: Cliff (049 161) 2420
Open: 9am-6pm six days a week
Closed Wednesday

C. P. AQUATIC CENTRE

SPECIALISTS IN
FULLY QUARANTINED
JAPANESE KOI

Stockists of all live fish foods, plants and
accessories.

We will also provide the services to
install your complete pond set-up.

For fast friendly service

CALL US NOW ON
0252 26974

110 Tanks containing 6,000 Tropical Fish to be seen at . . .

THE BOOT AQUARIA

336 HARRISON ROAD, LEICESTER — Tel: 0533 668747

NOW AVAILABLE — CORYDORUS NANUS, CORYDORUS HABROSUS, CORYDORUS MELINI, CORYDORUS METAL,
CORYDORUS ARCUATUS, CORYDORUS OBINAE, CORYDORUS GRILINEATUS, CORYDORUS JULI, CORYDORUS
RETICULATUS, CORYDORUS SCHWARTZI, APISTUOGRAMA AGASSIZI, APISTUOGRAMA MACMADERI, APISTUOGRAMA
HYDOLITA, APISTUOGRAMA CACATOIDE, BLUE EYED PLECOSTOMUS, ROYAL PLECOSTOMUS, MANY OTHER SPECIES
ALSO IN STOCK.

PLUS LARGE SELECTION OF BOOKS
COMPLETE RANGE OF FOODS FOR
ALL TYPES OF FISH.

Open: Tue, Wed, Thur, Fri, Sat 9.30am-6pm
Closed Monday
OPEN ON SUNDAY 10.00am-4.00pm



WHY NOT CALL US NOW ON (0533) 668747. ALL ENQUIRIES WELCOME

CLASSIFIED

TO ADVERTISE HERE: RING HAZEL PAYNE ON 01-353 4881

QUALITY AQUATIC PLANTS BY MAIL ORDER

Aquatic plants are the background to your beautiful fish. Why not capitalise on it with some rare and unusual plants.

35 Aquatic Plants £5.95

Including:
3 Red Hedge Plants, 3 Hair Grass,
2 Wheel Plants, 5 Cabomb,
5 Eelgrass, 2 Amazon Sword,
5 Green Fern, 5 Water Wisteria,
3 Standstill Ivy
Suitable for a 24 inch aquarium.

70 Aquatic Plants £14.95

As for 36 inch. Plus:
5 mixed Cryptocorines,
2 Sagittaria subulata,
2 Sagittaria platyphylla,
3 Bacopa Amplexicaulis
Suitable for a 48 inch aquarium.

ALSO AVAILABLE

50 Amazon Sword (large)	£12.50
50 Cabomba	£2.95
50 Eelgrass	£2.95
50 Green Fern	£4.95
50 Water Wisteria	£4.95
50 Giant Vallis	£12.50
50 Vallisneria Torta	£4.95
50 Hairgrass	£2.80
50 Wheel Plant	£7.95
50 Hydrophilis Polysperma	£6.95
50 Red Hedge Plants	£2.95
50 Fountain Plant	£13.95
50 Standstill Ivy	£7.95
50 Mixed Cryptocorine	£15.95

CALLERS
WELCOME

55 Aquatic Plants £9.95

As for 24 inch. Plus:
3 Giant Vallis,
3 Crassosoma Wendtii,
5 Vallisneria Torta,
4 Fountain Plants,
4 Hydrophilis Polysperma
Suitable for a 36 inch aquarium.

Fish and house collection
as for 48 inch.
Plus a further 50 plants.
£19.95

ANY AQUATIC PLANT OR
COLLECTION, CAN BE SUPPLIED
TO ORDER.

To order, simply telephone us quoting your Access or Visa number or forward a cheque or P.O. for the correct amount. Free weights included with all plants.

Planting Kits! Ideal for aquarists using under gravel. Filters £1.50.

YELLOW LEAVES? TRY SOME IRON FERTILIZER £2.45.

AQUARIUM PLANT FOOD £2.40. KING BRITISH PLANT FOOD £2.35. OUR OWN PLANT FOOD £1.90.

PLEASE ADD £1.25 FOR P&P AND ALLOW 7 DAYS FOR DELIVERY.

ALSO EXCELLENT
SELECTION OF
TROPICAL/MARINE/
COLDWATER
FISH



OCEAN AQUATICS

167 Sunbridge Road, Bradford, West Yorkshire

Telephone: 0274 370892

Open Times: Monday, Tuesday and Thursday 10am-6pm, Friday 10am-6pm, Saturday 9.30am-5.30pm, Sunday 10am-4.30pm.

For all
your
classified
advertising
please ring
Hazel Payne
01-353 4881

A SELECTION OF
TROPICAL AND MARINE FISH,
COLDWATER FISH & REPTILES.
WE ALSO SPECIALISE IN
CUSTOM-BUILT TANKS.

YOU DESIGN IT . . .
. . . WE BUILD IT

We have extended. We now
have 75 tanks of fishes and 13
tanks of reptiles.

Please contact: Frank Seal,
316 & 322 Owlter Lane,
Sheffield S4 8GF.

THE ASSOCIATION OF
AQUARISTS offer membership
to clubs (£6.00) and individuals
(£3.00) everywhere. Magazines,
books, lectures and judges lists
available. 20p stamp for details to
Mrs Jan Mallett, 31 Overstrand,
Aston Clinton, Bucks HP22 5GA.

VERY LOW PRICES on all aqua-
rium products by mail order. Write
for an informative price list: Aqua-
scape, Freepost, 5b Queen Street,
Wells, Somerset. BA5 3DP.

WHITEWORM in half litre chemi-
cal free organic compost. Instruc-
tions and food, p&p. £2.45. Mr.
Evans, No. 20 Pentrethedyn
Street, Machynlleth, Powys SY20
8DN.

KILLIFISH. Why not find out
more? 400+ varieties. Refresh-
ingly different. Mr S. Davidson,
British Killifish Association Publi-
city, 34 Butchells Green Road,
Kingswood, Bristol BS15 1DS
S.A.E. appreciated.

PONDLINERS — Butyl rubber
20 years guarantee, 33p square
foot. Telephone (0992) 443489,
or send for sample. Ponds &
Pumps, PO Box 64, Hoddesdon,
Herts EN11 8AH.

NORTHERN DISCUS

Quality Discus at realistic prices

We now have a lot of our own tank bred fish
available. Prices from £6.

Schmidt socke strain seven sobalps £15.

Please phone for details.

Available from these shops

Stewart at:
The Tropical Fish Shop
6 Fairfield Road
Buxton

Tel: Buxton (0298) 6881

Mick at:
Tropics at Stockport
246E Wellington Road
South Stockport

Tel: 061-480 5630

We also sell a full range of tropical — coldwater and marine fish
and all accessories.



from **PISCES U.K.**
the first name in mail order tropicals

Unbeatable prices on top quality fish and plants.
Safe delivery guaranteed anywhere in the UK.

JUST LOOK AT OUR DISCOUNT PRICES.

Discus from £2.50-£75

Cichlids from 30p-£230

Community fishes from 10p

Molluscs from 70p

American cichlids from 30p

Aquatic plants from 8p

Plant parcels from £5

Koi-pond from only 50p.

CARRIAGE
COSTS NOW
REDUCED

Cheap and cheerful, wind and wonderful, big or small. The choice is
yours. Send 13p stamp for full lists to PISCES U.K., 63 Winkle Rise,
Stromsbury, SY3 5JF or phone Cheryl or Terry on 0743 67785.
Trade enquiries also welcome.

IT'S BETTER WITH ...



One of the two giants in the manufacture of fish foods and treatments.

Sera Floating Pond Foods

The ideal diet for ornamental coldwater fish

Contains only natural ingredients.



KOI PLUS

The all-in-one Koi food contains all the basic essentials you would expect from a quality Koi food, but with a big PLUS: essential amino-acids, important ballast substances minerals, trace elements, vitamin A, B and E, wheatgerm and colour enhancer. With this carefully balanced selection of ingredients, your Koi will be more vital, more colourful and more resistant to disease. Never clouds the water.

Now available nationwide through better aquatic outlets.



BIOFLAKES

Low in fats, high in ballast, a little protein and much carbohydrate. Easily digestible wholewheat flakes, fish shrimps and lean beef form the basis of this flakefood, with added minerals for bone structure and vitamins for vitality.



BIOGRAN FOODSTICKS

Contains all the necessary carbohydrates, natural trace elements, minerals for bone structure and vitamins to produce healthy fish. Contains sufficient ballast material to prevent fat accumulation around heart and liver.



Blagdon Water Garden Centre Ltd., Unit 6 and 7, Walrow Industrial Estate, Commerce Way, Highbridge, Somerset. TA9 4AG
Telephone (0278) 781556 Fax (0278) 782079

1/27/82



AQUATIC CLASSICS by CASTLEMERE

Quality real wood veneer in
Mahogany, Old Oak or Yew
handcrafted to match
today's home.

For your nearest stockist
please ring 0277 824011
Head Office: HOMEHEAD FARM
ONGAR ROAD
STONDON MASSEY
ESSEX CM15 0LD

TRADE ENQUIRIES WELCOME