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KOI REVIEW
OF THE YEAR



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AQUARIST AND PONDKEEPER

DECEMBER 1988
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COVER STORY

(Photograph: J-M Labat/
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The Copperband Butterfly, *Chelmon rostratus*, is an Indo-Pacific fish which grows to around 17cm (7in) in the wild, but usually remains smaller than this in aquaria. Despite their somewhat delicate appearance, some Copperbands can become quite aggressive towards members of their own species, particularly when kept in pairs or trios. Larger shoals tend to result in less aggression. However, relatively few aquarists adopt a "shoal approach" to marines and, in so doing, miss out on one of the truly spectacular sights of the hobby. *Chelmon rostratus* will readily take live and deep-frozen foods, but can sometimes prove difficult to wean off these and on to dried foods.

SUCCESS STORY

They say time flies when you're enjoying yourself... and it's true.

The fact is that we've had a tremendous year, the high point of which (speaking personally) was the acquisition of *Aquarist & Pondkeeper* by Dog World Ltd. Under the new ownership, all manner of things have become possible... and there's much, much more to come (we're only warming up!).

Koi Talk, one of our several new 1988 series, has proved every bit as successful as we could have hoped for. Under **John Couveller's** lively guidance, it has caused both Koi-keepers and dealers to stop and think about what they do. Not everyone has agreed with everything John's written... but that's fair enough. After all, isn't healthy discussion one of the main trademarks of our great hobby? John's regular inputs, allied to **Roger Cleaver's** expert advice and **Nigel Caddock's** very personal features, have all been key components in our concerted efforts to stimulate interest in, and debate about, Koi-keeping. So, watch out for more thought-provoking Koi-biased editorial offerings in 1989.

Herpetology Matters has only been going for a few months. Yet, **Julian Sims's** fast-growing mailbag emphatically shows that we've struck just the right chord with many of our existing readers; it also shows that our regular input on reptiles and amphibians has brought in a healthy crop of new *A & P* supporters.

First Steps — aimed at beginners — is even younger, but we already have enough material and ideas from leading writers to take us well into 1989.

Our competitions continue to flourish, while on the more serious side, our reporting of some of the major problems and issues which, inevitably, rear their heads from time to time, has been extremely well received by hobbyists, members of the trade and official bodies alike (see, for example, this month's encouraging letter from the British Veterinary Association regarding our 'balanced and complete' review of this year's outbreak of Spring Viraemia of Carp).

November saw the launch of our **Great Editorial** with **Dick Mill's** views on the controversial subject of Aquatic Shows. More such editorials, written by other leading figures of the aquatic world, have already been lined up for the year ahead, and will be appearing every few months.

Have you ever wondered what it's like to be involved in staging a national show, or running a Public Aquarium, or planning a full year's Fancy Goldfish breeding and rearing programme, or organising one of the world's largest reference fish collections? If you have, then keep a lookout for our forthcoming occasional series **A Week in the Life** which will provide fascinating personal insights into the activities of a number of highly contrasting, but equally committed, "aquatically-linked" people who will tell their own stories of a typical week in their hectic lives.

Our colourful **Supplements** have gone from strength to strength in 1988. So much so, that we have a fresh batch planned for next year — a little different in presentation and content, but just as exciting in every other way.

Then, of course, there are new competitions, great give-aways, new series, our regulars, special **Spotlight** issues (replacing our **Focus** features), important specially-commissioned "one-offs"... plus a few important surprises.

Exciting times lie ahead... made all the more so by your consistent and enthusiastic support throughout the year. Join us, therefore, in 1989 for what promises to be the fullest and most varied, informative and enjoyable editorial package ever.

In the meantime, thanks a million for your encouragement.

Have a great Christmas and New Year.



John Dawes
Editor

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My most abiding frustration in fishkeeping is that I have really simple ideas — and few of them come off. First it was fish of one particular colour. How dazzling, I thought, would be a tank full of blue fish — or green fish. But nature, in all its forms, conspires against me. Blue or green fish are few and far between. Then it was a 'quiet' tank. I saw and fell in love with Glass Catfish. The books assured me they needed a quiet tank — so I made a list of peaceful fish. I already had a selection of *Corydoras* — hardly hoodlums! So what else could I buy to provide mid-water interest? Gouramis, Black Mollies, four *Boria nishikawaki* and a pair of *Badis badis*, the Chameleon fish that are so interesting and quiet if not bothered by Cichlids.

Before the introduction of the Gouramis, the tank was shaping nicely. The *Botias* were playful but hardly a threat to anyone, the *Badis* fed peacefully, with little competition, the Mollies started breeding. Then I slid in the pair of Dwarf Gouramis. Bedlam! The male chased the female for three days. I waited for them to settle down — and they did, he being distracted by building a bubble nest that stretched halfway across the tank.

Encouraged by this development, I bought some more — blue, this time. Within a day one of the Catfish died and they were all returned to the shop. The pattern established itself gradually — I tried most varieties of Gourami, only to find the Catfish dying, the *Badis* not only retiring — and underfeeding — but also applying for sheltered accommodation.

I consulted a friend, wondering if she could throw any light on the enigma of Gourami behaviour. She could. She'd had a pair of Blue Gouramis that proved such a nuisance she decided to give them a taste of their own treatment — and introduced them to her Oscar tank. The Oscars turned white and hid.

Finally, I found the Gourami for me. I bought a pair of Honey Gouramis. Actually, they turned out to be two males — but by trial and error I matched a pair — very sneaky fish, these. Another friend looked at them doubtfully and told me I'd be wiser to stick to Dwarfs — they were easier to breed and the young didn't need minuscule food. But I'd gone off the Dwarfs; their colours were attractive — their behaviour wasn't.

Having rid the tank of all disruptive elements, I left the Honeyys to settle in. They were all I could wish for — polite, colourful and happy. As soon as the female showed signs of breeding, I set up a 18 x 8 x 8 in (45 x 20 x 20cm) tank. In this I installed a small heater, an outside thermostat placed right at the base with silicone sealant — this avoids having to re-site it when the water is lowered — and a foam filter. With water from the main tank and plenty of plants, I completed the job by fitting glass lids to ensure that the air above the water was free from draughts. The pair went in and bred within days.

Although Honey Gouramis are not given to wife-bashing, I removed the female after



A pair of Honey Gouramis (male in full breeding colours) — my ideal choice of fish that are beautiful, gentle, adaptable and easy to breed.

A TASTE OF HONEY

Are you looking for the ideal fish for your small tank? If so, you may well find — as Amanda Grimes did — that Honey Gouramis are the perfect choice.

breeding as the small volume of water was only being filtered through sponge and I could cut down any chance of pollution by limiting food to the male. He ate very little and spent most of his time underneath the nest, fussing about like an over-zealous flower arranger. As soon as the fry hatched, he too, was removed.

As Gouramis are surface-breathers, it is customary to lower the level of the water for the fry so that (it is said), once they develop their labyrinth organs, they will not exhaust themselves in constant swimming to the surface. I do this as soon as the parents are removed. With Honeyys this has to be done very carefully as they are barely visible. I use a jam-jar so that I can check to make sure I'm not throwing away any youngsters — it's laborious but well worth it. I also slowly build up food in the water by adding tiny amounts of Liquifry daily.

A message to those of you who can't

breed Guppies — Mystery and Luck. All my fishbreeding has been accompanied by these two. In this case, the mystery of *Hydra* — those nasty little white things that appear whenever you have scrubbed a tank, treated the plants and boiled the gravel! As I have no *Hydra* in my main tank and the watering-can I transfer water in is scrupulously clean, it still remains a mystery where they come from. But come they do — and the Honey Gourami fry thrived on them!

It would take another page to describe their fascinating development from minute, elongated fry to that distinctive Gourami shape — so I leave it in your hands. If you're looking for a fish that is beautiful, gentle, adaptable and easy to breed, try these. And if you're tempted to dismiss those words with personal failure of 'easy' fish behind you, a little further encouragement: I can't breed Guppies, either.

News from the societies



The Irish Tropical Fish Society

The Irish Tropical Fish Society Open Show is the biggest show of its type in the Republic of Ireland, attracting a total of 240 entries. As usual, this year's event was very well supported by colleagues in Northern Ireland.

Luckily, it was a fine day at the sea-side resort of Bray and that helped swell the attendance considerably, with almost 1,000 people passing through the doors. Although entries weren't as high as last year's 'bumper show,' they were, nonetheless, considered to be quite good by the organisers. Some of the more interesting species on display included a superb *Leiocassis nanaensis* Catfish and an excellent *Poecilia latipinna* (Sailfin Molly). Best Fish in

Show (and winner of the *Aquarist & Pondkeeper* Gold Pin) was a very impressive Gold Severum owned by Tom Power from Dublin.

Goldfish enthusiasts were also well-catered for, with the coldwater section attracting by far the biggest entry yet. By all accounts, quality matched quantity — an indication of the rapid growth of the hobby in Ireland.

Details from Martin Roche (P.R.O.), Irish Tropical Fish Society, Blackhall, Kill, Nass, Co. Kildare, Ireland.



International Cichlid Convention News

As planning for this important event gathers pace, details are now being released by the

organisers on a regular basis. In the latest Newsletter, Charley Grimes reports, in his very personal and extremely readable way, that he has been advised (by being called a "Bozo" — among other things!) to tantalise readers by releasing details of the list of twelve international speakers in lots of three or four per Newsletter (*you're learning fast, Charley*). His current "trailer" reads as follows:

"Under the best circumstances we normally experience at an ACA convention, only one, big, and new name speaker is possible because of expense. At ICC 89 you are going to get a dozen, and let me repeat **big names and new names**."

Ad Konings, author of the new "Tanganyikan Cichlids," a book destined to be a classic, readable with great pictures, and the hottest book on the market. I understand he is an excellent speaker and we know for darn sure he has plenty to interest us.

Now, let me run a speaker

by you, for name recognition; a collector, author and an adventurer, Heiko Bleher — the man who does what we can only dream of doing. A real life "Indiana Jones." I could sit for ten hours and listen to his adventures. For ICC 89 he will talk about the Congo.

Dr David Ford, the developer of 'Aquarian' Fish Foods (distributed in the US by Mardel Corporation), to talk on nutrition. Nobody, but nobody, knows more on the subject of nutrition, and he is an excellent speaker, too."

Visits to Florida's fantastic fish farms (see *The Florida Experience, Parts 1 and 2*, written by *A & P* editor John Dawes in the June '88 and July '88 issues) are also on the agenda for the Convention which is scheduled to take place in Orlando, Florida, between 10-13 August 1989. Fuller details are available from Charley Grimes, 8342 W. 88th Street, Indianapolis, IN 46278.

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Herpetology matters



By Julian Sims

Terrapin Farming

The Diamondback Terrapin (*Malaclemys terrapin*) naturally inhabits the shallow brackish water in the estuaries, bays and salt marshes of the Atlantic coast of North America from Massachusetts southwards around the Florida peninsula to the Gulf coast of Texas. There are seven different sub-species.

Up until the turn of the century, Diamondbacks were common throughout this range, but by 1900, the succulent texture and distinctive flavour of Diamondback flesh had been recognised and this quickly became a popular but expensive delicacy. Supplying terrapins to restaurants resulted in the over-collection of these reptiles from the wild. Diamondbacks almost became extinct in many areas, particularly the bays of North Carolina.

In 1902 the United States Bureau of Fisheries began a study into the captive breeding of these terrapins and, by 1909, feasible techniques for "artificial propagation" had been developed.

Basic requirements that were recommended following these seven years of research included the construction of terrapin holding pens or "pounds" at a point on the beach where at least some brackish water remained at low tide. The incom-

ing tide was used to flush out and clean the pounds. The walls of such pounds are always constructed of concrete, not railway sleepers which are attacked by wood-boring shipworms. Pounds also include a large bed of sand in which females can lay their eggs. The eggs, incubated naturally by the heat of the sun, take from between 65 to 90 days to hatch. The young were collected and cared for in rearing houses for 8 to 12 months. This helped to avoid attack from Brown Rats (*Rattus norvegicus*) — the Diamondbacks' only major predator other than man.

Between 1909 and 1946, 241,013 young terrapins were reared by U.S. Fisheries Biological Station, Beaufort, N.C. and released into the coastal waters from Chesapeake Bay to Florida.

This was an early and little-known example of a captive breeding programme to save an endangered species in the wild. Unfortunately, it had one fault which must be avoided in all future programmes — especially the captive breeding of tortoise sub-species from the individual islands of the Galapagos Archipelago.

The Northern sub-species of Diamondback, *M. terrapin* had many distinct colour variations restricted to isolated localities by the geography of its habitat. However, due to widespread collecting of adult terrapins for captive breeding and the general release of the captive-bred juveniles, it is now not possible to assign a distinct colour variation to a particular region of the coast.

Commercial farming of Diamondbacks as a source of meat

was not economically viable. The chief problem was the slow rate of growth of this long-lived terrapin. There were no immediate cash returns because it took from 8 to 10 years for these reptiles to reach marketable size. One ingenious farmer did supplement his income by charging an admission fee to his terrapin station. At feeding time he rang a bell and his terrapins gathered in a specific feeding area within a pound.

Diamondback terrapins have particularly attractively marked speckled heads with jaws usually outlined in a much paler colour. They do well in captivity, so it would be interesting to hear from readers who keep these reptiles, whether they maintain them in freshwater or brackish water.

Hurricane Gilbert

Hurricanes are bad news. Devastation is quite rightly measured in human terms — loss of life, tragic injuries and damage to property.

However, wildlife and the natural environment also suffer. During the mid 70s, North American herpetologists were alarmed at the damage such severe winds caused to shallow areas of fresh water, especially the edges of lakes and ponds. This is the habitat favoured by hatchling terrapins and the number of these tiny reptiles dramatically declined after the passage of a hurricane. Unfor-

A Green Lizard (*Lacerta viridis*) basking in a Mediterranean hedgerow . . . but how long will they continue to be able to find hedgerows to bask in?



tunately, hurricane Gilbert will have taken a similar toll on the hatchling terrapins caught in its path in 1988.

Endangered Mediterranean Herpiles

The coastal habitats of the Mediterranean are being destroyed by soil erosion, chemical pollution, land development and tourism. So immediate are these problems that the United Nations Environment Programme (UNEP) has developed the Mediterranean Action Plan. A prime objective of this Plan is to combat pollution of the sea.

In addition to this strategy, the Council of Europe is endeavouring to protect marine turtles in the Mediterranean. Two coastal areas are seriously threatened by the development of tourism:

(i) Laganas Bay on the Ionian island of Zakynthos, Greece, is an egg-laying site for Loggerhead Turtles (*Caretta caretta*). Approximately 2,000 "nests" are excavated by female turtles per year.

(ii) Dalyan Beach, Turkey, where tourist facilities are being developed near the nesting area of Green Turtles (*Chelonia mydas*).

These two regions have been proposed for inclusion on the list of marine sites of "high natural value" to be protected as marine parks or "biogenic reserves" by the Council of Europe.

On land, the future of the remaining natural Mediterranean forests is also a matter for concern. Areas of herpetological importance which will be especially protected include the Golfo di Orosei, eastern Sardinia, and the Evros/Menderes Delta between Greece and Turkey.

The Council of Europe also intends to designate parts of the Serra de Tramuntana on the island of Majorca (Mallorca) as a "biogenic reserve". This is the habitat of the rare Balearic Midwife toad or "Ferreret" (*Alytes muletensis*). The species was only discovered eight years ago and, due to its very limited distribution, is in special need of protection.



From left to right, Koi 88 provided a golden opportunity for some of the country's top fish to appear in public for the first time ever: Kin Matsuba (owned by Gregory Peck); Kujaku (owned by Alan Rogers); Showa (owned by Joe Wilmington); Kujaku (Doitsu) (owned by Ian Stewardson); superb Sanke (owned by Gregory Peck) — Grand Champion at the 1988 Northern Section Open Show; outstanding Kohaku (owned by Peter Waterman), Grand Champion at the 1988 South East Section Open Show.

NISHIKIGOI RE

It's been a year of highs and lows for Koi-keepers . . . of superb Koi . . . and of the first-ever dealer-organised show. Nigel Caddock has been keeping an expert eye on developments and presents his personal summary of some of the highlights. *(Photographs by the author.)*

It is a very unfortunate but undeniable fact that the major factor influencing Koi-keeping in the UK in 1988 has been SVC. I mention this first because it is important that readers appreciate that the consequences of the spread of SVC to ordinary Koi collections would be devastating. Fortunately this has not been the case, and many of this year's real problems have been associated with irrational responses to the fear of SVC, rather than actual outbreaks.

There is nothing new about SVC. It has been an identified virus for many years. The difference this year has largely been the level of publicity it has received. Make no mistake, SVC is BAD NEWS, but outbreaks

have been contained and, in general, have not affected Koi to any significant degree.

That was the bad news. Now the good news, which, as usual with such a captivating and stimulating hobby, will always prevail, as the spirit of fishkeeping in general, and Koi-keeping in particular, is totally irrepresible.

The quality and volume of Koi imported into the UK seems to grow each year, and 1988 has seen the importation of some superb fish. Hobbyists in the UK owe an enormous debt of gratitude to UK Koi dealers who continue the very high-risk business of importing specimens of superb grade. This not only improves the overall quality of Koi in the UK, but also, just as

important, it enables lower-priced Koi to come within the reach of the many of us who are able only to admire the very best and expensive fish.

There is no doubt in my mind that UK Koi dealers are second in the world only to the Japanese, and have contributed an immense amount to our increased understanding and appreciation of Koi.

BAND 88

In celebration of their status and their belief that Koi-keeping should not be confined to the summer months, February 1988 saw the first-ever dealer show in the UK.

BAND 88 was an unashamed celebration



VIEW OF 1988

of Koi and the UK dealers association were sole organisers, financiers, exhibitors and Judges at what can only be described as the finest gathering of Koi ever seen in the UK. This claim is not lightly made, as anyone who attended will confirm. In addition, every Koi exhibited was for sale. In the event, BAND 88 was the first and last Japanese-style show held in the UK in 1988, and was a fantastic success, proving that Koi-keeping and Koi Showing need not be restricted to the summer months.

Many of you will have observed that Koi seem to look their best when the water is cooler (not too cool — min 50°F — 10°C). It is my experience that the skin and general lustre of a Koi at 55°F (c13°C) is often better than that of a Koi kept at 75°F (24°C). It is a fact that cooler water enhances the coloration of Koi, so what better time of the year to hold a Koi show than in February?

It should be stated that most of the exhibited Koi came from heated water and that the show water temperatures were 50-

55°F (10-13°C) which is not really cold. It should also be stressed that this type of winter event is not recommended for inexperienced show organisers and that there are many factors to consider, especially the fact that most hobbyists still allow their winter pond temperatures to drop below 45°F (c7°C). But that's another story!

The real benefit of BAND 88 was that it promoted the hobby of Koi-keeping at a time of the year when there is little else to offer beleaguered Koi enthusiasts. It was a brilliant success and my congratulations go to its creator, Peter Waddington. I look forward to many more premier winter events.

The BAND event illustrated the point that one of the best methods of promoting fishkeeping in general, and Koi-keeping in particular, are Koi shows. Love them or hate them, they provide a superb arena for hobbyists to share their Koi with fellow hobbyists, an opportunity for the professional to show us "what's new" and, generally, an excellent family day out.

There are now many Koi shows held each year all over the country, and even 1988, with all the problems SVC has presented, has seen some spectacular events.

1988 OPEN SHOWS

The biggest casualty of 1988 has been, NOT Koi, but Koi shows. The show season has been decimated, and the usual 20-30 events was reduced to a mere handful. It is for each organiser to assess the risks, examine the available options and act accordingly. Unfortunately, too many were swayed by a large amount of irrational scare-mongering and opted to cancel. On NO occasion did any official from MAFF take action to cancel any Koi shows.

Fortunately, some organisers had the foresight to identify that there were alternative show formats that would enable a show to be held without the risk of infection. The new Japanese-style of Koi show was initiated in the UK in 1985 by the BKKS Northern Section and, although ensuring both fairer and more meaningful competi-

tion, it necessitates the mixing of owners' Koi in communal vats. Anyone who has attended a Japanese-style show will have seen how superior this type of event is. However, it is imprudent to mix Koi together in communal vats when there is an identified risk, such as SVC. This does NOT mean that the show must be cancelled, merely that an alternative show format be devised.

Many organisers chose to cancel, a decision which must be respected. Although unfortunate, it is a fact that the responsibility for the welfare of exhibited Koi lies firmly with the organising committee and it is a decision for each individual committee to take on the basis of their experience and assessment of their situation. I look forward to 1989 when such very tough decisions will, hopefully, be behind us.

Despite the problems and constraints, some superb Open Shows have been held in 1988. The Northern Section annual Jamboree was again held in mid-June in the superb grounds of Tatton Park in Cheshire. The Northern Section were the first-ever BKKS section, and continue to stage super events; the 1988 Open Show was no exception. The Supreme Champion belongs to Gregory Peck and is a superb and unique 22in Taisbo Sanke.

The show was, as always, a super family day out, and I have no doubts that 1989 will see continuing development of one of the UK's premier events.

The South East Section are one of the up-and-coming Koi-keeping sections of the BKKS who have an enormous degree of enthusiasm. Their 1988 event held in late June, radiated friendship and the warmth that typifies Koi-keeping events.

The quality of exhibited Koi was excellent and the depth of quality of exhibits was very impressive. The ideal garden centre venue afforded the makings of a superb show.

The Grand Champion was a 26in Kohaku owned by Peter Waterman, who many of you will recognise as a third of the Rick Astley music machine of Stock, Aitken & Waterman. Whether you like his music or not, the quality of his Koi collection, and especially the superb Kohaku, is undeniable.

I feel sure the SE Koi-keepers will continue to flourish, and many congratulations to Doug Holder and his super team for a brilliant show. This event was even worth a two-hour queue to get through the dreaded Dartford Tunnel!

"KOI 88" — BKKS NATIONAL SHOW

The national representative body of any hobby has a special responsibility, and when a major problem threatens, it is most important that the actions of that body rise to meet that challenge.

Arrangements for Koi 88 were finalised well before SVC became a problem. The very difficult dilemma facing John Beattie, Koi 88 Show Chairman, was just what to do.

After much heart searching and thought, John's solution was, like any good manager, to turn a potential disaster into an opportunity. This he did and conceived the first

BKKS exhibition of Koi from hobbyists, judges and dealers.

The result of this decision was the presence of many of the country's top Koi, many of which, for various reasons, had never previously been exhibited.

This enabled each owner to have his/her own vat and thus, no SVC problem, and the UK Koi addicts to have their yearly "fix" of premier Koi. (See my report in the November installment of *Out & About* for further details.)

MKS AND YKS

There are several Nishikigoi societies in the UK, of which the BKKS with 25 local sections, is the largest. The Midland Koi Society (MKS) offers a range of activities in their area and the Yorkshire Koi Society (YKS) provides the same in the Yorkshire area. The annual YKS event is held each year on August Bank Holiday Monday in the superb grounds of Harewood House near Leeds. Holidays prevented my attendance this year, but previous events have provided a super family outing and this really is a must for the diary.

UK CLOSED SHOWS

Many Koi-keepers in the UK learn much from staging Koi shows and I can speak firsthand in saying that there is no better way to learn about a range of matters Koi than being involved with the running of a show. Often, however, the availability of resources limits what can be done.

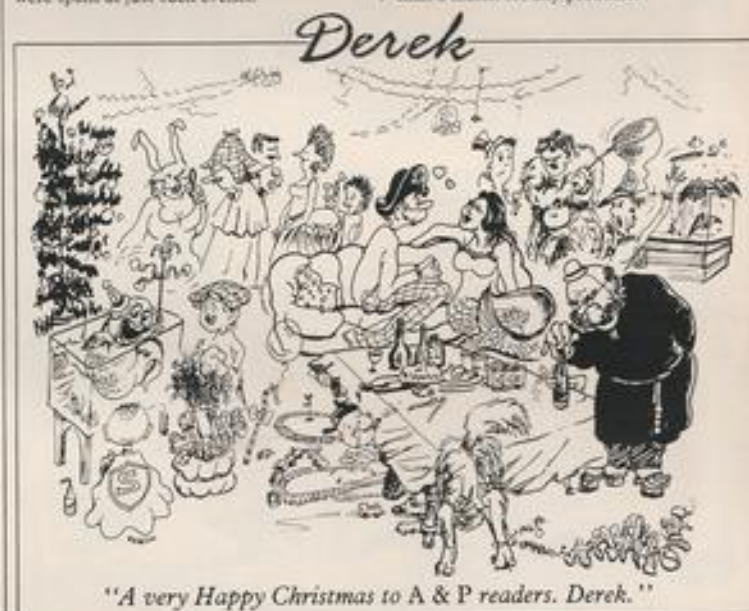
Many Koi-keepers opt to run closed shows whereby the event can be customised to suit the needs of the local exhibitors. This is how many sections begin and many famous Open Events started off life as a small closed show with six vats and 30 Koi. This type of event can afford enormous pleasure; some of my most enjoyable days were spent at just such events.

The South Yorkshire section of the BKKS are one such group of Koi enthusiasts whose annual closed show has attained almost cult status and is certainly one of the events I look forward to more than any other.

The fellowship and friendship generated at such events forge relationships that endure almost anything, and it is a rare privilege in our modern society to be part of such a group. In addition to the people there are some superb Koi around such events. The Grand Champion at the S Yorks 1988 event was a superb 24in Manzo (breeder) Inazuma (lightening Hi Pattern) Kohaku owned by Barry Woods.

Koi-keeping is all about people and Koi and the mutual dissemination of information to improve our general understanding. True Koi-keepers who really understand will tell you that there are no beginnings or ends to Koi-keeping and that the development of true understanding and knowledge is a lifelong quest. It is this undefinable quality that tempts us to chase a moving target that doesn't really exist, and it is the pursuit of this almost profound quest that is the essence of Koi-keeping.

As the show season disappears with the "last of the summer wineing" and summer shows merge into autumn barbeques, and then into Christmas dinner dances, pond temperatures begin to fall and the last pond dose of Masoten & Malachite or Formalin & Malachite or Masoten, or etc., etc., etc., descends on our Koi, it is time to reflect on a year of paradox. It has been one of excitement and disappointments, of elation and devastation, and of hope, and of despair. Through all these trials and tribulations, Koi and Koi-keepers will continue to develop and flourish because, whatever problems appear, they are matched and overcome by an enduring and unquenchable spirit of Koi-keeping which will always be more than a match for any problem.



"A very Happy Christmas to A & P readers. Derek."



The idea was to make the tank look as if it was part of the room.

TOWARDS THE ULTIMATE MARINE AQUARIUM

John Walton, ardent hobbyist, conservationist, farmer . . . and keeper of assorted cats and dogs, describes the ins and outs of his brainchild: his ideal tropical marine aquarium.

Like many people involved in marine fishkeeping, I have travelled a well-trodden road; commencing with freshwater tropicals, progressing to native marines, acquiring various different tanks (most of which were second-hand) and finishing up, at one time, with both marines and freshwater systems, with native and tropical fish for both. In other words, four bigish tanks, and an awful lot of work! Eventually, the penny dropped, and I decided that what I really wanted was one big tropical marine tank.

Since that time, a lot of water has flowed through a lot of filters, if you'll excuse the pun. My first set-ups were all "air-pump-undergravel-filter" systems, and while these worked well enough, there was always the irritation of pump and bubble noise, plus, unsightly salt deposits, and the necessity of stripping down the tank completely every three years or so as the filter medium clogged. Then I discovered the Tunze system, which, at that time, seemed to offer everything I wanted. By watching out for adverts, I managed to find a complete set of

almost new equipment at a very reasonable price, and proceeded to install this into my tank.

At switch-on time, I was absolutely delighted! There was a good strong current swirling round the tank; the protein skimmer didn't look too unsightly, as it was filled with a seething mass of white foam — first time I'd had a protein skimmer, and I was very impressed!

The system was good, too, as time proved. Fish thrived, the tank looked well, and water quality was excellent. After a while, though, the buzzing made by the motors became, I felt, almost as irritating as air-pump noise — I had a wooden hood, and there was a lot of reverberation which we couldn't entirely cure. Then one of the pump motors began cutting out spasmodically, so I thought I'd buy a new one and have the old one overhauled as a spare. Until I obtained a price for doing just that, that is! Just to add to my joy, even to have the old pump overhauled was very expensive.

There was, too, the problem that the system *did* intrude into the tank a bit, and

also — the only real fault I could find with the system from a practical (as opposed to an aesthetic) point of view — because there was no water movement through the sand at the bottom of the tank, I thought "dead spots" could occur. Anyway, I persevered with the system (which was good anyway) until impending house alterations made the temporary cessation of fishkeeping activities imperative.

Birth of the "Ultimate System"

Knowing that we were going to be involved in some fairly major alterations, and that the tank would be out of commission for quite a while, I thought I'd sit down with pen and paper one night, work out what I wanted (or more appropriate, what I didn't want!) and see what I could come up with. And so began the "Ultimate Marine System" project, because it very quickly became obvious that I needed a completely new tank, and one moreover, that would have to be a "special", for reasons that will quickly become apparent.

First of all on my list, I wanted a tank with no obvious "works" — no heaters, air-pumps, circulating pumps, filtration equipment, etc. Second, I wanted a tank with no noise except, possibly, that of running water. Third, I wanted the highest possible water quality, and ease of maintenance. And a very big fourth, my wife wanted an end to water changes in the lounge. Fifth and finally, we both wanted an aquarium that looked as if it was part of the room, rather than an afterthought stuck in at a later date.

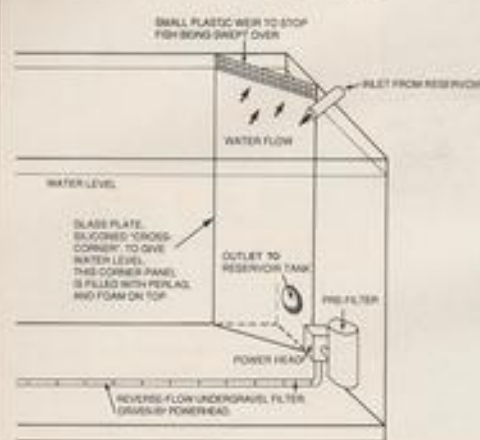
The answer appeared to be a completely separate tank, containing all the heating and filtration equipment, in a position where water checks and routine cleaning could be performed easily and quickly. In this case, outside the house! This sounds drastic, but in actual fact, it was very easy, and has solved all the problems admirably — it's incredible how easy water changes are now.

The "System"

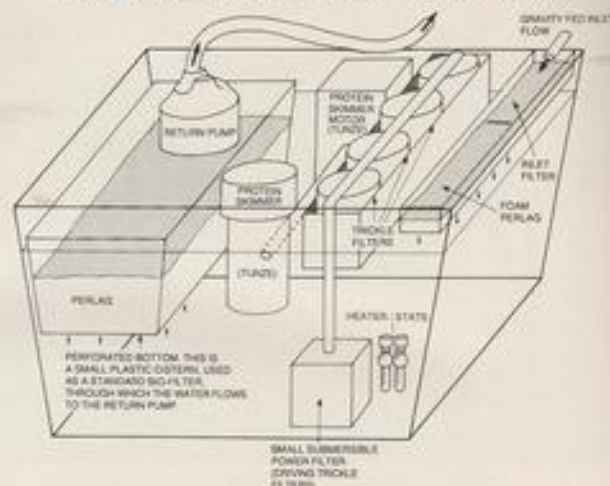
Basically, the reservoir tank is a big plastic water cistern — 70 gallons (315 litres), I think was the size — in a brick surround, to match the exterior of the house, well insulated, and at a height which makes routine checking very easy. I wanted to keep the best of the Tunze system, so the trickle filters and protein skimmer went in here — I only needed a minute flow to feed the trickle filters, and this was achieved by using a very small submersible power filter.

I also wanted a lot of submerged filter medium in the reservoir, to give maximum bacterial activity, with a small amount of pre-filtering, so as not to strip out feed from the water too quickly (since the aquarium was to be predominantly invertebrates). This was achieved by letting the water flow, by gravity, from the main tank, through a sprinkler bar, over a plastic container filled with Perlax (topped with foam, or filter wool, as a pre-filter), into a main settling chamber. This chamber also houses the small pump for the trickle filters, the heater/stats, the protein skimmer and an airstone to re-aerate the water before it

MAIN TANK



RESERVOIR TANK



Left, corner of the main tank to show various attachments (see text for further details). Right, schematic view of the reservoir tank.

returns to the main tank. This it does by flowing through a second lot of Perlag housed in a bottom-perforated plastic container, the pump being set on top of the Perlag, which is held down by plastic mesh (it floats, otherwise!).

The pump itself is a plastic Walrus, and since this gave rather more flow than I wanted, I throttled it down a little with a fan control unit. As a final refinement, I also decided that I still wanted an under-gravel filter in the main tank, but a reverse-flow one, so as not to have to worry about future strip-downs due to clogging (the reason for wanting the reverse-flow under-gravel was simply to keep the whole of the tank bottom sweet, as well as providing a massive boost to bacterial capacity).

So how has it worked? Has it worked at all, I (almost!) hear you ask? Can a home-produced system (made up of commercially available products) give comparable results to a commercially produced one? The answer, on all counts, is a resounding yes. The tank runs completely in silence, apart from a gentle trickling sound. All you can see are fish, inverts, sand and rocks. There is no rat's-nest of cables festooned across the rear of the tank, and the inhabitants are thriving better than ever before. And maintenance is minimal — What more could one ask?

Practical details

Just a few words now on practical details, though the diagrams and photos should make most of it fairly clear. Although I wanted no "works" inside the tank, I eventually decided that I would run the under-gravel-filter with a small powerhead, even though it would have been easy to have tapped a junction into the main return flow. The reason for this was that if ever I have a main pump failure, the separate under-gravel system will still keep the tank



The inside of the reservoir tank (see drawing for details).

healthy.

The powerhead, which I fitted with a pre-filter, is disguised with a glass surround — simply a topless cube which I siliconed together, rubbed some silicone over the outside of it and then sprinkled with coral sand. This has "greened-over" now, and is hidden behind a large piece of coral anyway, and so, is invisible.

The water leaves the main tank via a hole in the end panel (which was why I had to have the tank specially made), through standard plastic waste-pipe fittings.

Immediately across the corner where the hole is situated, I stuck on a piece of glass inside the main tank, with the height of this at the level at which I wanted my final water level. This corner compartment was also filled with Perlag (in a mesh bag), and topped with a triangular piece of coarse filter foam as a "preliminary pre-filter".

All the electrical equipment in the reservoir tank is wired back to a point in the house, and any joints are waterproofed — this is important! Finally, the electrical system is protected (or I am, according to

how you look at it!) with a circuit-breaker. The lighting is metal-halide, chosen largely because I wanted a completely separate, suspended system, and, by and large, I'm very happy with this. It is possible, though, that a mixture of Floresets and floodlights would have done an equally good job at much less cost — though not as tidily, and, perhaps, also at the cost of greater usage of electricity.

I've tried running the tank both with, and without, cover glasses, and have to say that I definitely prefer "without". More light reaches the plants and anemones, there are no covers to clean, and the only drawback is that more water evaporates. However, since this is topped up from outside, it isn't really a problem.

One final point that needs to be watched. Should the outflow from the tank become clogged and stop flowing, the pump in the reservoir, not being able to think, will do one of two things. It will either pump all the water in the reservoir into the main tank, overflowing all over the carpets as it does so, or it will pump until it runs dry. In the interests of domestic harmony, it is much better if the latter can be arranged!

All you need to do is ensure that the pump sits high in the water (my Walrus has the intake at the bottom, so it's easy), so it can, at the worst, only pump enough water into the main tank to fill it almost to the top. This has never happened, but it is much better to make sure before, rather than after.

And that's it. Maintenance is reduced to a weekly rinsing of pre-filters, three times a week topping up with fresh water to keep salinity stable, and monthly water changes, and, since most of these operations are done from outside, there is much less water sloshed around the lounge. In fact, the only thing wrong with the system is that I can't think of any other ways of improving it!

News

New aquaculture product from Peter Hand

Following the successful launch of their Aquahealth Division earlier this year, Peter Hand (GB) Ltd announce they have been granted a licence by MAFF for their new product, Tetrplex.

Tetrplex is the first fully licensed in-feed oxytetracycline product specially developed for use in aquaculture and is specifically indicated for the treatment and control of furunculosis in Atlantic Salmon. The unique aspect of this product is the incorporation of a specialised aquaculture carrier called Hydropel, which is designed to maximise stability and minimise solubility of the oxytetracycline, so preventing any leaching into the water.

Tetrplex, a 50 per cent formulation of oxytetracycline, can either be incorporated into feed during manufacture or can be dusted onto the surface of finished pellets. As an aid to adhesion, the use of Aquatak, a nutritionally enhanced and highly palatable liquid coating medium, is recommended.

Tetrplex is the second Peter Hand Aquahealth product to be granted a full licence. The first, Aquinox, a 50 per cent formulation of oxolinic acid, is now extensively used in the UK aquaculture industry in addition to being the most widely used aquahealth medication throughout the world. In the UK, Tetrplex is available on prescription, exclusively through veterinary surgeons.

Further information from Dr Martin Jaffa, Aquahealth Division, Peter Hand (GB) Ltd, Peter Hand House, 15-19 Church Road, Stanmore, Middx HA7 4AR. Tel: 01-954 7422. Telex: 922029. Fax: 01-954 1897.

**MORE NEWS
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Armitage buys Algarde

Armitage Brothers Plc, the pet products and accessories company, have acquired the business of Algarde, the manufacturer of the well-known range of specialist aquarium products, based in Essex, for £520,000.

Following the disposal of the cat litter business, this is the second Armitage purchase after that of the assets and brand names from Happy Pet. Russell Taylor, the Chief Executive at Armitage Brothers, said: "The purchase from the present owners who, after a handover period, will be retiring, fits in with the Armitage strategy of expanding in the business it knows best, ie pet products and accessories. Algarde will con-

tinue to run as before, dealing direct with wholesale only, totally separate from the main business under the new General Manager, Derek Genders, who has a background in the pet trade. There are two reasons for this:

- 1) It is the most appropriate for such a specialist area.
- 2) The Armitage range is very large already for one sales force to handle properly, especially after the Happy Pet acquisition and other new product launches."

Details from R. C. Taylor, Chief Executive, Armitage Bros Plc, Armitage House, Colwick, Nottingham NG4 2BA. Tel: (0602) 614984.

Fishworld show details unveiled

Sharpe Image Publications & Promotions Inc, publishers of the new specialist fishkeeping magazine *The Discus Digest International*, are pleased to announce that they will be sponsoring the FISHWORLD '89 Exhibition which will be held once again at Alexandra Palace over the Spring Bank Holiday weekend next year (27 to 29 May, 1989).

FISHWORLD '89 will be a combined international trade and public exhibition with Saturday, 27 May being for the trade only. The show will be open to the public on Sunday and Monday, 28 and 29 May. The Exhibition will take up both the Great and West Halls of Alexandra Palace, with some 10,000 square metres of space.

Building on the success of last year's exhibition, FISHWORLD '89 will feature a number of new, exclusive attractions to be announced over the coming months, plus guest appearances from celebrities and seminars and lectures from the world's leading authorities on the many aspects of

fishkeeping. The event will again be run in conjunction with the Federation of British Aquatic Societies who will be organising an International Open Show. During the public days of the show, several attractions, plus an exciting supervised children's play area will ensure that families can enjoy a good day out.

The television, radio and press coverage achieved by FISHWORLD '88 brought the hobby to the notice of the general public and the sponsors plan to attract twice as many visitors to the 1989 Exhibition with a large-scale UK and international media campaign.

Space has already been reserved by some of the leading British, European and Far East companies. Advance tickets and block bookings will again be available. Full details are available from the Organisers' Office at: Fishworld '89, Cliveden House, Priors Way, Bray, Maidenhead, Berks SL6 2HP. Tel: (0628) 38912/770500. Telex: 848794. Fax: (0628) 29942.

OBITUARY



Nigel Davies (Stapeley)

Nigel Davies, co-owner of Stapeley Water Garden Centre, who lapsed into a coma on 14 August after an horrific swimming accident while on holiday in America, has died without regaining consciousness.

Nigel, 43, who, with his brother Ray, owned the multi-million pound Stapeley Water Garden Centre, at Nantwich, Cheshire, was swimming with his son, Stuart, 14, in the sea off San Diego, when a rip tide dragged him under. Lifeguards pulled him to safety but he had no heartbeat and had stopped breathing. He was rushed to the nearby Mission Bay Hospital where he was put on a life support machine, but remained in a deep coma despite the efforts of top American medical experts.

His brother Ray flew out to America armed with tape recordings and photographs of family and friends. Doctors had hoped that familiar sounds and faces would help to bring Nigel out of his coma, but after three weeks it was decided he should be flown home.

He was flown back to Britain in an air ambulance plane with a team of doctors and nurses. After arriving at Manchester Airport, he was transferred to Leighton Hospital, Crewe, but never came out of the coma. He died on Saturday 17 September.

Donations are being made to St Luke's Hospice, c/o Stapeley Water Gardens, Nantwich, Cheshire.



E. PERKINS

Xenomystus nigri, the African Knife Fish, one of the very few Featherback species offered for sale on a fairly regular basis.

THE TALE OF A FEATHERBACK

Jason Endfield only popped into his local fish shop for a tub of food . . . and ended up with a somewhat larger handful!

I actually only went into the shop to buy some fish food, but, of course, who could resist browsing at the tanks while the shop assistant took a calculatedly long time to "just go and get your change".

Peering into the enticing displays, I was soon transfixed by a tankful of Black Mollies. "Nothing so remarkable about Black Mollies" I hear you all cry — but this display was different. Lurking at the back of the tank was a strange dark form of a fish, menacingly eyeing up the other tank inhabitants and making sure they were in no doubt who the boss was.

"Specially reduced, that one, Sir", came a voice from behind the counter. "Last one", he added persuasively.

As the creature emerged from the depths of the aquarium to peer at me, I recognised it as a Clown Knife Fish, (*Notopterus chitrala*), or to give it its proper common name, East Indian Featherback, so called because of its feather-like dorsal fin. This six-inch specimen had obviously come, not from India but from Thailand as it displayed the characteristic 'eye spots' on the sides of its compressed pewter-coloured body (these, according to something I had read somewhere, reportedly being absent on the Indian specimens).

The fish and I immediately hit it off — I took to it, and it appeared to react favourably to my face on the other side of the glass (strange, but true). I really didn't need another fish, with precious little room to

accommodate anything else aquatic, but at the 'special price' I couldn't not buy my new-found friend. So, together, we travelled home on the crowded bus. I've never been so grateful for a brown paper bag — had my fish been on display to the other passengers, I would have received even more funny looks than usual!

In the shopkeeper's opinion, my Featherback should settle in to my large community tank without too much trouble. Famous last words! On being introduced to its new home, my fierce-looking purchase was greeted with everything but a warm welcome from the other inmates, particularly two Black Spot Barbs, whose choice of who to bully and who to ignore will always baffle me. What to do now?! I couldn't stand by and watch my new friend be nipped to death, and yet the other tank I had was full to the brim with mass-produced Guppies at various stages of both development and pregnancy. But I had little choice . . .

Diet dilemma

The Guppies, being friendly little creatures, were not too worried about their new tankmate, though perhaps they should have been: the following morning their numbers had decreased noticeably and, in the corner of the tank, slept a very content looking Featherback. I tried to be annoyed, but it was very difficult to with the expression on its innocent-looking face, though it is true to admit that that "little" face does incorporate an enormous and not-so-innocent

mouth, capable of ingesting a large Guppy with no trouble. (At this point, I think it would be only fair to the Featherbacks to point out that, if given an alternative, this species actually isn't too fussy on live fish as food, and when provided with a choice, will invariably favour small pieces of meat to the smallest of live fishes.) But, in order to eliminate any temptation, the remaining Guppies were transferred, with little thought of their fate, to the community tank, where, suprisingly, they were accepted by all, including those baffling Barbs.

What about feeding my Featherback though? Although the shop assured me that it had been accepting flake food, I doubted that. Since its latest meal, was it going to take flake readily again? Who'd choose baked beans when fillet steak was on offer? I was right. My "friend" would probably have agreed to a diet of Guppies — I wouldn't, however. To me 'a life is a life' . . . except, that is, for earthworms (well, one has to draw the line somewhere!) So worms it was. The Featherback took to them quite well and grew quickly on this high-protein diet, substituted with bits of steak and liver when I didn't feel like digging up the garden for worms (especially on those cold, wet nights when all the worms seemed to have dived for cover).

Try as I might to persuade it, it wouldn't so much as look at a mealworm, which other fish relish — probably because it knew how convenient it would be for me to purchase them from the local pet shop. It did, however, help us out over the Christmas period by acquiring a liking for turkey, though from this fact arises the disturbing possibility that the taste of turkey corresponds to the taste of worms . . .!

And so, there it remains in its 'one

species' tank with just the company of a colony of snails, and the very temporary company of an earthworm or two. I can safely recommend the East Indian Featherback to any aquarist looking for a real 'character' fish, and one that is apparently quite intelligent. Any aquarist, that is, who has enough time on his/her hands to dig up endless supplies of earthworms. I imagine that, as with the majority of fish, at least some live food is essential to maintain the Featherback in peak condition, even if one can wean it onto prepared foods.

Aquarium requirements

The East Indian Featherback is a particularly gentle creature and a graceful, expert swimmer, with incredible flexibility in its long undulating anal fin, enabling it to swim backwards with as much ease as it can forwards. Shy to begin with, the Featherback should be provided with some shelter, in the form of a cave or even just a long piece of rock at one end of the tank, where it can feel secure and return to for one of its regular daytime naps, being a semi-nocturnal species.

In a short time, especially if kept in a single species tank, a Featherback will become tame, emerging from its hideaway to greet its keeper, and gliding to and fro when he or she does any in-tank maintenance. And this fish is also tolerable of a wide range of water conditions, but it will stop feeding in protest if the water becomes too stale. Therefore, regular partial water changes are to be recommended — indeed they



Young *Notopterus chitala* — note the "eyes", or ocelli, on the body — probably an indication that this fish came from Thailand.

actually appear to enjoy 'bathing' in the inflow of new water. Temperature should be around 78-80°F (25.5-27°C), and, ideally, there should be one or two clumps of plants, with, perhaps, a floating variety to provide shade. It must be borne in mind, however, that the Featherback comes to the surface to gulp air, so access should be unrestricted.

As for accommodation, well the Featherback's growth rate can be alarmingly fast, and wild specimens of 48 inches (120cm) have been known. Don't panic! Captive specimens (though I can only speak for my own) tend to grow more slowly after they reach about 12 inches (30cm), and, I suspect, that my specimen will settle down at around 18 inches (45cm). A two-foot (60cm) tank will suffice initially, but be prepared to move your fish to larger quarters

as the need arises.

The family of Featherbacks — Notopteriidae — contains just four known species, our subject, *N. Chitala* being the largest, though all achieve at least 8 inches (20cm) in length in the wild. One relative occasionally offered for sale is the equally interesting African species, *Xenomystus nigri* which totally lacks the dorsal fin. *X. nigri* is a suitable addition to a community tank housing larger peaceful species, but is smaller and drabber than *N. chitala*.

I don't believe that any records exist of captive breeding and it is highly unlikely that this could be attempted in anything but the largest of aquaria, and, only then, after much research into their spawning requirements. But aquarists are a determined lot (or is it stubborn?) and no doubt someone will succeed eventually.

Finally, on a light-hearted note, while reading up in various books about my acquisition, I was amused to discover in an old publication (*), that: "although the flesh is said to be uncommonly rich, a strong prejudice exists against it owing to the fish being supposed to live on human carcasses..."

A myth of course! As I write, my Featherback is staring at me menacingly through the glass... of course it's a myth...

(*) "Fishes, Ascidians etc." by Harmer, Herdman, Bridge and Boulenger, Macmillan and Co Ltd., 1922. (Found in second-hand shop, £2.50).

News

New course starts at Sparsholt

A flood of enquiries and offers of help followed Sparsholt College, Hampshire's announcement, earlier this year, that it intended to establish a National Aquatic Training Centre. Even six months later the College was, on average, receiving one request for further details of their plans each day.

Generous support has been given by over 60 companies — in the form of pond and aquarium goods, fish, plants and a library of books. These companies have ranged in size from the large household names to individual retailers. The support offered has had an international flavour — a Ghanaian fish exporter, for instance, offered to help establish a theme aquarium.

Interest in the full-time National Certificate in Aquatics and Ornamental Fish Management Course was brisk — so much so that the

College temporarily ran out of brochures during the summer. Eighteen students accepted places on the inaugural course which started this September — a remarkable figure for any new course, but particularly when one normally required a year's relevant experience prior to entry. Several of the mature students (those over 25) have entered the course after a suitable period of experience to re-train for a new career. They include an ex RAF radar technician and a chemical engineer.

Already the College has received a few applications from those wishing to enter the course in September 1989 and, once again, anticipate receiving more applications than there are places available. Early applications are therefore encouraged.

Sparsholt College will provide an increasing range and number of short courses using

the facilities in the Training Centre as it develops. A number will be run early next year and be concerned with water quality and disease management.

Further details of the Na-

tional Certificate and short courses can be obtained from The Principal, Sparsholt College Hampshire, Sparsholt, Winchester SO21 2NF.



Battling to attract the crowds

'The Saxon Marauders' battling it out on the show grounds at Billing Aquadrome. An added attraction to catch the imagination of Koi Keepers during the BKKS Annual Show in August.

Naturalist's notebook

By Eric Hardy

Great Crests and Natterjacks

Britain's biggest known distribution of over 4,000 Great Crested Newts was made last August by the Nature Conservancy from a newly discovered haunt in an old brick-pit at Buckley, North Wales, to ponds in Clywd and Wirral, because of imminent bulldozing of the clay pit. Had it been discovered earlier, it would have been declared an SSSI (Site of Special Scientific Interest) for this golden-bellied, warty, cold-blooded creature of the night. Europe's largest newt, is also one of the scarcest, protected under the Bern Convention for Wildlife and with only some 6,000 known British haunts.

Lack of fish and angling is one explanation for their astonishing abundance at the brick-pit. The pit also had 2,000 Smooth Newts, also Palmates, Montane Newts (the commonest in hilly Wales), and had been undisturbed for 20 years.

I was also with another Nature Conservancy warden at the Natterjack Toad pools, mostly artificial scrapes, on Formby dunes at Cabin Hill. Natterjack toadlets are more adapted to the early summer drying out of their haunts than are competitive Common Toads. The Conservancy is keeping down the latter which prefer deeper, more permanent pools, by keeping the shallower Natterjack pools more seasonal, and dried-out by August. The only Great Crested Newts there are in the pool at Woodvale (Ainsdale) H.Q.

Here, since Tertiary times, this newt stays longer in the water than others, probably keeping its gills longer and remaining later in the water as a precaution against drying haunts outside. Its scarcity in the north may have been overstated as it's turning up in other places, like Newton le Willows, Pennington Flash and Rixton Claypits in Lancashire.

The seasonal life of a pool determines much of its aquatic life. The Crested Newt's preference for permanent pits differs from the Natterjack Toad's on our Merseyside dunes, where success has been gained with



Female Crested Newt (male just visible in the background). This species has recently been the subject of a massive redistribution exercise in North Wales.

breeding-pools or slacks which are not much more than a foot deep and dry out after early summer. Hundreds of Natterjack toadlets crawl from their pools in the drying days of early summer, avoiding desiccation in the dense ground vegetation of the dunes, and coming forth in the cooler night. Here, some melanic Natterjack toadlets were found this year.

Seasonal marsh plants

The seasonal drying of the Natterjack slack at Formby dunes, Cabin Hill, enabled Shoreweed, *Littorella*, and an abundance of Marsh Pennywort to spread extensively, together with Flat Sedge, *Blymus*, whose stems feel flat between one's fingers instead of the more usual triangle of sedges, and Blunt-flowered Rush whose stem-pith shows longitudinal as well as transverse cells.

Only the second south Lancashire site of Black Bog-rush flourishes in the dunes, near Hillside, Southport, the other site being Farnworth near Bolton. It grows in the north of the county near Little Hawes Water and Silverdale Moss.

Turkish Dwarf Newt

A new dwarf subspecies of Common Smooth Newt *Triturus vulgaris schmidtleri*, three-quarters usual length, has been

described to the Zoological Society by C. J. R. Rexworthy of the Open University, who found it at Karacabey, N.W. Turkey. It is almost without toe-flaps and tail-filament and has pointed crest-spines. This is the seventh subspecies of the Smooth Newt. A hybrid between Smooth and Palmate Newts was recorded from mid-Wales.

Harmful Merseyside tapwater

The chemical treatment of Merseyside tapwater, harmless to humans, became too alkaline for fishkeepers this year and many aquarists lost fish when changing their tank water. Some of the harmful chemicals were added to rid the water mains of Water Hognouse, *Aetideus aquaticus*, wrongly called Freshwater Shrimp, though it is an isopod crustacean, common in tapwater from old pipes.

Plugged-in snakes

A gardener-friend cutting the grass in a Liverpool park recently suddenly saw an American Garter Snake rear up in front of him. He could not stop the mower in time to avoid cutting off the end of its tail.

The survival problems of our native snakes are much worse than those of birds; almost every year some pet-owner dumps his/her unwanted serpent in a city park, a selfishly dangerous as well as illegal act. A young Grass Snake hunting tadpoles in Abbots Moss pool by Delamare Forest Whiteway Walk last spring disproved the frequent misquote of its extinction in Cheshire. Native Grass Snakes are not so dark olive as purchased continentals, and lack yellow lines down the back. Both will sham death when approached.

The Garter Snake is more interesting in that, after mating, the copulating male forms a mating plug after sperm transfer, which makes the females temporarily unavailable to other males, which recognise this and leave them alone. Our Adder has a copulatory plug, but does it to keep the sperm in.

North and Irish Sea Seals

As I wrote 50 years ago in the now defunct "Water Life", those who read Frank Backland's remarkable journey to provide London Zoo with its first living porpoise, frantically pumping air into a tank as his horse-drawn cab sped back to the city, will appreciate the problems of keeping a stranded seal. At the time of writing, distemper infections have killed 7,500 Common Seals in the North Sea and both Grey and Common in the Irish, where over a tenth of the Dee Estuary's Grey Seals have died from what is believed to be different virus.

Not all strandings were dead. Two from the Isle of Man were put into its wildlife park.

Before the war, Liverpool Museum Aquarium kept a Common Seal over 20 years in a 30ft indoor glass tank after it was stranded in Mersey. Most, however, are short-lived like a young Grey Seal put in the penguin-pond at the old Liverpool Zoo, though London Zoo has successfully kept Grey Seals in an open outdoor pool. It is now illegal to do this without a licence. The late H. G. Hurrell kept an Atlantic seal in his garden pool in Devon.

Apart from the recent virus, many have pneumonias, septic eyes or fins, and a mange-like bacterial infection of the skin. "Seal Finger" can sometimes be contracted by handling them carelessly.

Epidemics are a natural form of population control and, despite culls of Common Seals in Orkney and Greys on Farnes, their phenomenal post-war population explosion, exceeding 3,000 on the Farnes, made them vulnerable. Several premature Grey Seal births in July and August, before the main September breeding season on the west coast were underweight, but it is normal for a few early births in July where animals miss the diapause and, without delayed implantation, are some three months premature. Normally the 20lb calf is born after 15 minutes labour and can swim in six minutes. Up to 25% die in their first week, from storms or pneumonia.

Letters

Northern Ireland — not left behind

I would like to comment, through your Letters Page, on the article *Keeping a Brackish Aquarium* (August '88). One comment stood out as being highly inaccurate: "The Land That Fishkeeping Forgot", *Northern Ireland*.

Having moved from the East of England some three years ago, I was amazed at the quality of fishkeeping over here. The water quality is generally very suitable for breeding most "difficult" species. For example my local shop in the Beersbridge Road is never without home-bred Discus and dozens of other home-bred fishes of many species.

Although my work seldom permits me the time to attend club meetings, many club members have welcomed me to their homes and fish houses and I have seen the dedication and care that has produced many fine young fish, including tropical marines. My own humble experience covers about 30 years (I still trade with one of your advertisers of 40 years' experience).

Though having achieved nothing that could be regarded as spectacular in fishkeeping, I can nevertheless claim to have

been fairly active in the hobby. I have been a past member of many societies, ie, Dewsbury, Leeds, Hampstead, Hendon and others, committee member of F.N.A.S., B.A.S.S. and past secretary of the F.B.A.S. I worked in laboratories at London Zoo for five years and was the Curator of Morecambe MarineLand when it opened as the First Oceanarium in Europe.

Fishkeeping has progressed tremendously during these years, but Northern Ireland has not been left behind; the knowledge and friendship freely given is quite outstanding. I am only sorry that Patric Baird has not found this so.

Ken Denham
Ballywalter
Co. Down

A & PSVC Review "balanced & complete"

We have discussed your article, *The SVC Review* (Oct '88), and feel that it is a very balanced and complete report.

I do not think we have any particular comments to make except to endorse the view that, whilst SVC is a serious problem, it is not a total tragedy. Good husbandry practices are essential, and should be used at



Two of Kevyn Wilson's collection of Silver Dollars.

all times, not just when there is a "scare" on. We will not really know what the full situation is until summer 1989 (ie after next spring), when we will see if any further outbreaks have occurred.

We will be very pleased to help at any stage in the future if an appropriate occasion arises. You can contact us directly, or through P. Scott MRCVS, who is on our committee.

G. D. Cawley
Chairman,
Fish Sub-Committee
British Veterinary
Association

Silver Dollar Update

Just a short note to keep you up to date with the Silver Dollar development following my article *Silver Dollar Success* in the October '88 issue of *A & P*. The surviving baby from the first batch (born 5/2/88) was introduced into the large tank with the adult fish on the 27 April at 81 days old; approximate size was about the size of a 10p.

It is now 164 days old and approximately 2½ inches long; its body formation is good, the fins are fully developed, showing no signs of deformities, it eats anything given and swims very strongly.

The two survivors from the second batch of eggs are now 111 days old and are also doing well. One is about the size of a 50p, the other about the size of a 2p. Watching these grow over five months shows that the growth rate varies considerably between each individual fish, even when competition for food is non-existent or very low.

The Silver Dollars continue

to mate, but recovery of eggs has not been possible due to the lack of tanks available.

I hope this information will be useful as a follow-up to the article.

Kevyn Wilson
Walsall

Editor's Note: *It certainly is. Thanks a lot.*

John Dawes

Budget Koi Pool Costings

I certainly agree that a Koi pool for £570 as detailed by Andrew Tovey in the July edition of *A & P* is very reasonable.

I cannot, however, agree with his costings since he mentions the purchase of filter brushes and a 1,000 gph pump, but does not appear to include them in his costings breakdown.

I am sure that this was an oversight, but they must, together, have added over £100 to the final cost.

D. S. Gilliam,
Medina Garden Centre,
Isle of Wight.

Andrew Tovey replies

The exclusion of the pump from the costings in my July article *Koi Pool on a Budget* was an error on my part (£80). As for the filter brushes, they were left out because I regard them as optional extras and not really part of the basic set-up.

However, they cost me £25 and were bought from The Speedy Brush Company.

Thank you for bringing the above to my attention.

Andrew Tovey,
Llanelli, Dyfed.

Diary dates

Co-operative Aquatic Study Society

Recently received from David Davis (Sec, C.A.S.S.): "We have the pleasure of a visit on the 5 December 1988 to our Society by Dr Gordon Reid, Keeper of Natural History at the Horniman Museum and Library, Forest Hill, London.

Dr Reid has just returned from an expedition to West Cameroon and has agreed to give us a talk on the expedition and some of his findings. The talk is illustrated with plenty of slides.

We feel that this talk is too good to keep to ourselves and would like to open our doors to anyone that is interested in fish

and their habitat."

The date is 5 December 1988, starting at 7.30 pm at the Co-operative Education Centre, Fratton Road, Portsmouth. The cost will be 50p at the door, but refreshments will be provided. Details from D. Davis. Tel 0705 814622.

Swindon Aquarist Society

S.A.S. have just announced the date of their 1989 Open Show in the hope that early notification will help avoid clashes with other similar events. The date: 30 April 1989.

Further details from Jean Perrett (Secretary), 47 Coronation Road, Wroughton, Nr Swindon, Wilts SN4 9AT.

Spotlight Special

LIVING POISON JEWELS OF THE AMPHIBIAN WORLD

Keeping and breeding Arrow Poison Frogs is both relatively easy and spectacularly colourful. Experienced herpetologists **Robert and Valerie Davies** have been doing it for years and offer expert advice on the subject.

Aquarists will be familiar with the term 'living jewels' often applied to tropical fish. This expression could be applied equally well to many members of the family of frogs Dendrobatidae, commonly referred to as Arrow Poison Frogs. The common name is based on the toxic secretion from their skin; certain species are used by Central American Indians to provide poison for blow pipe darts.

However, one authority states that, after a period in captivity, the poison is greatly reduced and is virtually absent in captive-bred specimens. It is advisable to handle these tiny frogs with care, nevertheless! Many members of the family exhibit spectacular colour combinations such as black/yellow, black/red, blue/yellow and so on. Further, some of these colours have a metallic, enamel-like effect which gives the frogs a most striking appearance.

Dendrobates auratus

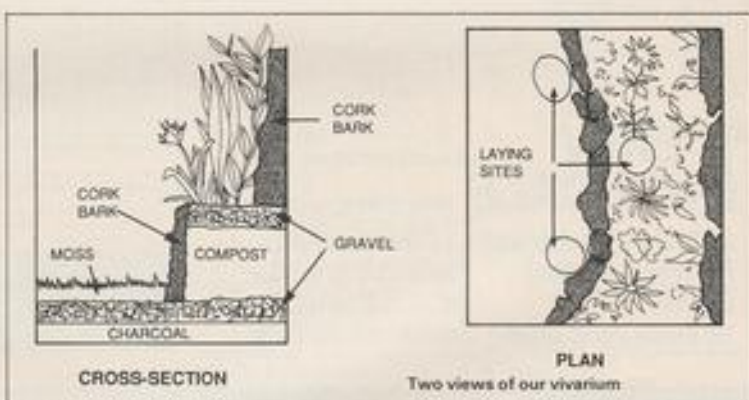
One of our firm favourites is *Dendrobates auratus*, a native of the tropical rainforests of Costa Rica, Nicaragua, Colombia and Panama. It is also now found in Hawaii after its introduction there in 1932. Adults range from 2.5cm to 4.5cm (1-1.8in). Their coloration consists of a beautiful, light metallic green with random black markings.

There is a wide variation in the markings, so individuals in a collection can actually be 'mapped' for identification purposes. However, these markings do tend to change in the early stages of the frog's life. In some individuals the green can be somewhat darker, or have a golden tinge. Sexes are similar but adult females tend to become larger and plumper, and the best way of sexing is from observation of behaviour. The males have a low twittering call, rather like birds in the distance.

Housing

Many species will thrive in captivity, provided they are properly catered for and, unlike most amphibians, are diurnal (active during the day), protected as they are by their toxicity, which is advertised by their brilliant colours.

The first consideration is correct housing. They need a humid atmosphere, so a glass



vivarium must be used. Our main breeding colony is housed in a 90cm x 50cm x 30cm (36 x 20 x 12in) aquarium which has a part-glass/part-mesh lid and is illuminated by a fluorescent light for 14 hours a day. (There is much debate at the moment as to whether UV lighting is necessary, but we have successfully propagated this species, both with and without UV tubes.) The temperature is maintained at 28°C (82°F) during the day, falling to 19°C (c 66°F) overnight.

Furnishing the vivarium

Furnishing the vivarium provides plenty of scope for one's aesthetic leanings. We try to provide a miniature rainforest which seems to suit the frogs and is pleasing to the eye. This is achieved by thickly planting the vivarium using moisture-loving plants, especially *Scindapsus aureus*, *Philodendron scandens*, *Peperomia*, *Cordyline terminalis*, *Maranta leucomela* and Bromeliads. In addition we use many common bog plants such as *Echinodorus* and *Cryptocoryne* species.

The bottom of the vivarium is covered with charcoal, followed by a layer of gravel. The rear half of the tank has a layer of potting compost about 10cm (4in) deep which is retained by pieces of cork bark and stones. Tall pieces of cork bark are placed against the back wall for climbing plants. Parts of the gravel are covered with pieces of short Sphagnum Moss. After planting, a layer of gravel is placed on the compost.



A refinement we have is a waterfall powered by a small centrifugal pump, which helps to keep the air humid. The whole set-up is sprayed until completely moist. After this, misting with tepid water is carried out on a daily basis. Although humidity is vital, the vivarium must not be absolutely and permanently saturated. After a suitable quarantine period (one to two months) the frogs can be introduced, once temperature and moisture are satisfactory.

This arrangement has worked perfectly well for 14 years with no pollution or epi-
Right, Dendrobates azureus — a really spectacular species of Arrow Poison Frog. (Photo: David Allison)





DAVID ALLEGON



DAVID ALLEGON



DAVID ALLEGON

Left, *D. leucomelas* has golden yellow patches which could easily have earned it the "auratus" tag possessed by its close relative. Centre, despite the "auratus" label *Dendrobates auratus* is, in fact, light green and black. Right, *D. tinctorius* combines the blues, light greens and yellows of some of its "sister species."

demics. The only maintenance undertaken is keeping the front glass clean and, occasionally, trimming plants. The Sphagnum Moss has covered most of the gravel so that it is no longer taken out and rinsed as we did initially.

On raising the lid the only smell is a rather pleasant earthy one. Presumably we must have a balanced system with an effective nitrogen cycle. The regular spraying washes any waste down into the gravel and compost where it is converted by soil organisms into nitrates upon which the plants feed, producing rampant luxurious growth.

Feeding

All captive creatures must have an adequate diet if they are to breed. The main point to remember is that *Dendrobates* can only take small insects not, as we saw in a shop, 2cm (0.8in) crickets. One must be prepared to take a little time and trouble to provide the correct foods on a regular basis.

Our specimens are fed daily on such items as wingless fruitflies, tiny crickets, waxworms and mealworms (up to 1cm (0.4in) in length), springtails and greenfly (adults and aphids). White Worm are occasionally fed by placing them on leaves (as they crawl downwards, they are plucked off by the frogs).

We maintain cultures of all these food items (except greenfly) in order to ensure adequate supplies. This means that, at any one time, we have 35-40 jars of fruitflies at different stages of their lifecycle. Occasionally, food items are dusted with multi-vitamin powder and additional powdered cuttlebone.

Keen gardeners will, no doubt, be horrified to learn that we plant nasturtiums in the greenhouse to provide large amount of aphids. Adult greenfly are collected in large numbers from the sycamores in the garden.

Breeding

Several species of *Dendrobates* are being bred in captivity on the Continent and in the USA, with *D. auratus* being one of the most common. Females can be prolific, producing about twelve clutches in a season.

Reports from the USA give the breeding season as being from the end of December until the end of June, but our colonies

breed from mid-May until the end of August.

To stimulate breeding, petri dishes covered with white paper towels are installed in two or three locations. On top of each one is placed $\frac{1}{2}$ of a coconut shell with two small entrances. An alternative is two leaves from a plastic rubber plant, one on top of the other to form a shelter. Our frogs use both types. The paper towel is kept moist and can be easily removed when the eggs have been laid on it. Misting is increased so that the vivarium does not get too dry. In addition, the temperature is raised one or two degrees and care is taken to ensure adequate food supplies.

Breeding is usually heralded by the males calling frequently and the females fattening out. All the frogs seem to be more active and appetites increase. Receptive females will approach a vocalising male and attempt to stroke him with a foreleg. He then moves off through the plants calling at intervals. This behaviour can last for several days.

At this time a dominant female will jump on other females and attempt to press them down, presumably to prevent them from mating with her chosen male. Eventually, the male leads the female to a selected shelter which she enters to lay her eggs.

Up to twelve eggs are deposited and fertilised. The eggs are left and later revisited by the male who moistens them. On the occasion we observed this moistening it lasted twenty five minutes. (The male accidentally pushed two eggs off the leaf but we retrieved them and they hatched successfully.) It is important, therefore, not to

move the eggs too soon after they are laid (allow at least 4-5 hours).

The tissue and eggs are carefully removed into a styrofoam tub with a translucent lid which has a few fine perforations. Just enough tepid water is added to reach the base of the egg mass. The tub is kept at 28°C (82°F) in an empty vivarium. Infertile eggs spoil quickly and must be removed.

Development is fairly rapid, with a small body appearing on top of the yolk by the fourth day. After 13-15 days the tadpoles wriggle out of the jelly and, to avoid cannibalism, are removed to individual plastic margarine tubs containing about 1cm (0.4in) of tepid water.

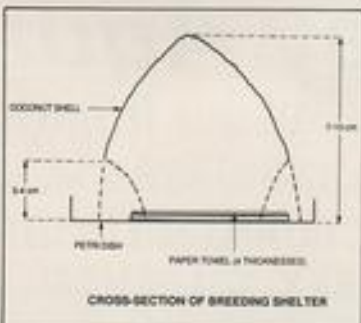
The process now becomes quite labour-intensive. After two days, a small pinch of food is added and, from then on, each tadpole must be transferred to a tub of clean, aged water (24 hours). Used tubs are rinsed and refilled for the following day.

Several recipes are advocated, but we use a mixture of high-protein fish flake, multi-vitamin powder, freeze-dried brine shrimp, powdered cuttlebone and tablet food, ground to a fine powder. As the size of the tadpoles increases, food and depth of water are also increased. The amount of food given is approximately $\frac{1}{2}$ of the size of the tadpole's head.

About six weeks from laying, all legs will have developed, so the froglets are removed to a small aquarium with 1.5cm (0.6in) water and a shelving bank of gravel over half the floor. They remain in this for two or three days until the tail disappears. By this time the green markings will be showing and the young frogs are finally removed to a small moist vivarium with adequate hiding places. Feeding is as for the adults, but waxworms and mealworms must be the smallest possible.

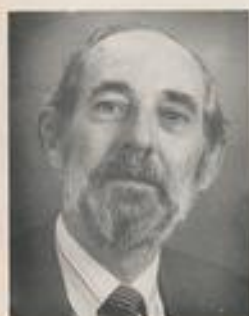
Conclusion

If a little time and effort is set aside, it is possible to breed these exquisite amphibian gems. Since their rainforest habitat is being devastated, it is vital to establish captive-bred populations, not only of these, but of as many herpetiles as possible. The sight of an Arrow Poison froglet hopping about on a carpet of moss is ample reward for one's labour.



Koi Talk

by John Cuvelier



Well here we are, rushing head-long towards yet another Christmas and, if you're anything like me, you still have not finished your preparations for the long months of cold weather ahead. It is rather difficult to think about winter when one's Koi are still feeding ravenously (late October), but you have to be sensible about it and make a start otherwise you'll be caught napping yet again.

Fast growth food

The mention of feeding reminds me that I earlier promised to keep you posted about the progress of this year's Koi spawning. Up to about a month ago, the remaining twenty plus were plodding along quite sedately, showing the first hints of colour (what else, but black!) when, quite by accident, I happened to spot some frozen food advertised and invested in a couple of poundsworth, at the same time wondering whether another packet of cigarettes would have done more for my nerves!

However, never was a couple of quid more wisely invested. As far as baby Koi are concerned, frozen bloodworms and *Daphnia* must be the food of the Gods. The transformation as regards growth rate has been really remarkable, the largest of the brood having doubled in size within a fortnight. It is now at a length approaching an inch and a half and already very obviously a Doitsu of some description, judging from the large scaling already visible.

It can be quite an education to see these babes hanging around underneath a three-quarter-inch square of blood-worm waiting for it to thaw

and disintegrate. These foods are only used to supplement the powdered Koi sticks which still form the staple diet, but they can be highly recommended.

SVC hope for '89

I suppose that 1988 cannot be allowed to slip away without some further mention of "it"! I suspect that many Koi-keepers simply wish to forget about SVC after all the doom and gloom. But seriously, was it all scaremongering? Let's face it, we won't know for certain until the spring of '89, will we? Yes, the very name of the disease says it all.

What is certain is that this year saw many sad faces around and about the showing fraternity. One can only hope for the sake of their sanity that 1989 will have better things to offer.

Grey Rat threat

Living in a rural area surrounded by farms as we do, a rather nasty worry has appeared on our horizon in the shape of

an upsurge in the Grey Rat population, the local paper in fact calling it a plague. The normal method for controlling these pests is to lay quite large quantities of poison down in the areas most frequented by the rodents. One effect of these poisons is to promote a raging thirst in the animals, causing them to seek water. The question I now ask myself is, should one of these pests happen to expire in my pool during the night, what effect, if any, would the poison secreted within the dying animal have on my fish? Can anyone out there hazard a guess, or am I worrying needlessly, in spite of the fact that large specimens often make an appearance around our pool at night?

Deterring thoughts

You've no doubt noticed the continuing reports of Koi theft which appear with monotonous regularity in all the main media outlets. A large garden centre in my neck of the woods has had its fourth 'clearout', two of them within the space of

months. When will these people learn that, for a relatively small cost, deterrents can be installed consisting of passive infra-red area scanners which, when activated, flood the selected area with high intensity light?

What is even more incredible is the private Koi collector happily prepared to fork out ten grand for one Koi but too parsimonious to lay out the equivalent of perhaps 2% of that figure to protect his/her fish. I can't say I have a lot of sympathy with that type of individual.

Okay, there's no such thing as total security, but at least some effort can be made, if only for the sake of the Koi, as goodness knows what kind of conditions stolen Koi can end up in (quite apart from the damage caused by the clandestine and hurried catching operation).

Stress-free Koi-keeping?

Whatever became of the gentle, stress-relieving hobby of Koi-keeping? Judging from some of the quite fascinating and highly entertaining exchanges of correspondence which I keep reading in magazines and journals connected with the hobby, usually emanating from sources in the trade (not always, I hasten to add, putting up my umbrella), the hobby is degenerating into a regular dog fight with the protagonists having forgotten that Koi-keeping should be a pleasure for all and not just a vehicle for their own point of view and theories.

Come off it folks, let's get back to enjoying Koi-keeping and leave the procrastination to the politicians; they're better at it.

Invitation

I'd like to finish this edition by throwing a wobbly in your direction. If there is anything appertaining to the hobby of Koi-keeping which you would like commenting upon in these articles, how about contacting our editor, John Dawes, and we'll be happy to oblige?

And finally, may I wish you and yours a very Merry Christmas and a better Koi-keeping New Year.

NEXT MONTH

Building on the resounding success of the highly informative series of **Focus** features which have been running this year, January's *A & P* takes matters a significant step further by becoming the first of our colourful brand-new **Spotlight** issues.

Each of these issues will concentrate on a particular group of fish and will contain specially commissioned articles, including our regular **Spotlight** feature with its now-famous, full-page, spectacular colour photograph. The first group of fish to come under our **Spotlight** will be **Livebearers**. So, for some really great reading on a selection of the best-known types of livebearers... plus one or two somewhat rarer ones, tune into *A & P* in January.

Also in our packed start-of-year issue:

- **Alan Watson** on the Pond in Winter... with a fascinating insight into freezing water!
- **David Armitage** reports on the first-ever importation and spawning of **The Sim Bushfish**.
- **Jerzy Gawor's** incredible experience with his **Deep-frozen Koi**.
- **John Dawes's** full-colour report on one of the most amazing sights of the aquatic world: a mouthbrooding **Dragon Fish (Asian Arowana)**.
- Plus all our regular favourites, including **Fred**, our piranha with no conscience, plus a great crop of very special one-offs.

See you all in January. In the meantime, all the very best for the Festive Season.

FISH PHILATELY

If you are looking for an interesting, enjoyable and educational activity to complement your hobby, look no further. Dr Derek Pluck has the perfect suggestion.

Philately (stamp collecting) has long been recognised as one of the — if not *the* — most popular of all hobbies, and it is estimated that there are as many as three million collectors in the United Kingdom alone.

It is not hard to understand why the hobby is both popular and absorbing. Stamps are attractive and colourful in their design and subject matter, and are interesting and informative — often conveying more information than pieces of paper at least ten times their size. In addition they may stir within us the feeling of faraway and exotic places.

In the past, collectors arranged their collections mainly on the basis of geography — according to the countries which issued the stamps, but nowadays Thematic Collecting (collecting stamps according to a subject, or "theme", rather than country) has become popular. There are twenty or so popular "themes", some of which reflect Natural History, or particular groups of flora and fauna e.g. birds, butterflies, wild animals, pets, reptiles and amphibians and fish.

Fish is a theme popular with many modern philatelists, including many who know little about the aquarium hobby, so if you are interested in the aquarium hobby, why not develop this interest by collecting stamps on the subject of fish?

Many countries have issued stamps depicting fish at one time or another, but they are most commonly issued by countries to which particular fish are native, or by countries which have an interest in conservation, ecology or natural history, or by countries which recognise the growing importance and popularity of the aquarium hobby.

Different approaches

You may wish to arrange your collection in one of a number of different ways, and one of the joys of collecting is gradually to improve the way in which you arrange and display your collection as it grows so that it provides you with the greatest amount of information and satisfaction.

You may wish to have a "traditional" geographical thread running through your collection e.g. collecting stamps of fish and simply arranging them according to the country of issue; you may wish to take a bio-geographical approach which reflects the worldwide distribution of your fish — splitting them into freshwater or marine,

New World or Old World, European or Asian etc; or you may wish to use scientific taxonomy and arrange your stamps according to order, family and genus.

If you are a member of a specialist association e.g. Anabantoid Association of Great Britain, British Killifish Association, British Cichlid Association, Catfish Association of Great Britain, SLAG, etc., you may be particularly interested in one order or family; you may then wish to keep a smaller, but very precisely arranged, collection. There are stamps to cater for all enthusiasts covering coldwater, tropical, marine and even herpetological subjects.

Where to start

If you wish to find out more about stamps and stamp collecting, then a good place to start is your local Public Library; junior readers will be able to enjoy the benefits of their school libraries as well. Even the smaller libraries are likely to have a number of books on the subject, under "Hobbies and Pastimes", "Art and Craft" and in the "Junior Section"; try to use the Library Classification Index and look under '769' and '383' and keep an eye open in particular for: "Thematic Stamp Collecting", by Margaret Morris. One of the librarians will be only too pleased to switch from some routine task to help someone showing a keen interest in using the library.

In the library you will find a number of books which will give useful guidance and advice on how to collect, handle, mount, display and arrange stamps and on how to write up your stamp collection. In addition, you will find the more recent editions of Stanley Gibbons Catalogue: "Stamps of the World". This is a large book which is published every year and which may be easily understood by the average reader. All the countries of the world are listed in alphabetical order and — if a country issues stamps — the stamps are then listed in order of issue, together with details of their subject matter. The catalogue gives details of the face values and the current prices for used and unused stamps; it also contains a good introduction which explains how to use the catalogue and how to identify a particular stamp.

Stanley Gibbons Publications Limited publish a number of guides, dictionaries, atlases and books to help the junior, beginner, inexperienced and experienced stamp collector. Many of these are modestly priced

and make ideal Christmas presents or "stocking-fillers". These books include advice on how to start, build and maintain collections, and some explain the language of the subject and provide useful geographical, political, social and economic backgrounds of the countries issuing the stamps.

Philately, like any new hobby, will have its own unique language and many terms may be unfamiliar at first, but remember that when you began the aquarium hobby you came across, and mastered, new terms and words such as pH and hardness of water, *Daphnia*, cichlids etc. You will soon learn to identify the countries and currencies and words like Commemorative, Definitive, First Day Cover, etc. are all explained in James Mackay's "Stamp Collecting — Philatelic Terms Illustrated", and in most other stamp books.

Suitable sources of stamps

When you have found out more about the hobby, you will want to collect more stamps. Where can you get stamps depicting fish? Initially, it is best to start with "Collectors' Packs" which can be obtained from large High Street shops such as W. H. Smith, or may even be on display in one of your local Newsagents.

"Collectors' Packs" may be based on themes such as fish or sea life (which may, incidentally, include freshwater organisms — not all philatelists are naturalists or biologists!) or they may be arranged according to country. Look out for stamps from Cuba and Poland; both these countries issue sets of large colourful stamps of interest to thematic collectors and frequently include ichthyological and herpetological subjects. The African Republics may also prove particularly rewarding sources.

Display/arrangement methods

When you have about a hundred stamps, you are likely to have a clearer idea on how you wish to arrange your collection and how you would like to see it develop. At this stage you should obtain a ring-binder, loose-leaf stamp album from a large stationery shop or stamp dealer. Initially you might like to select "pages" with plastic wallets or pockets as you may wish to change your arrangements before deciding on their final form. At the same time, get yourself a set of tweezers for handling stamps and a set of good-quality, pre-folded stamp hinges for mounting stamps (Stanley Gibbons offer folded stamp hinges with good advice on mounting on the packet).

Expanding the collection

Now it is time to expand your collection and to be more selective. Most towns with a population of over 30 000 can boast at least



one quality stamp shop, and most larger towns and cities have several. You can find them by looking in British Telecom's Yellow Pages, under "Stamp Dealers". Visit your nearest stamp dealer and tell him/her that you are a thematic collector of stamps depicting fish. He/she will be able to show you several sets of stamps to whet your appetite and will be able to give you the address of the Secretary of your local or regional Philatelic Society.

As you become more experienced you will be able to obtain, from your society or other experienced philatelists, details of Mail Order firms which supply stamps; these are usually sent On Approval for 10-14

days. After examining them, you purchase those you want and return the rest. Suppliers will do their best to meet your requirements as it will be in their interests to do so.

You may wish to contact a large international philatelic distributor who should be able to offer advice and supply items of particular relevance to your collection as they become available.

There are regional, national and international philatelic exhibitions and stamp dealers normally have trade stands at such displays. Details of exhibitions should be available through your dealer, local society or in Stanley Gibbons "Stamp Monthly", a magazine costing £1.10.

From top to bottom: Four examples from a thematic set from Cuba.

You may wish to arrange your collection according to scientific taxonomy. These two may be divided into one characin and one catfish.

There are many stamps which should appeal to aquarists who keep marines.

Bottom right, one of a German set depicting varieties of Guppy.

Bottom left, Herpetological subjects are also available for thematic collectors.

Junior readers may like to contact and join **Stamp Bug**, whose regular Newsletter has interesting information about the hobby and which includes several pages of pen friends with whom one can swap stamps.

Also keep an eye open on market stalls. In addition, it is particularly interesting to float stamps from old envelopes or postcards; all guides to collecting will tell you how to remove and dry such stamps ready for mounting.

Some benefits

By collecting stamps of fish you will learn much more about fish; in addition, you will need to consult the aquarium and scientific literature to find out more about the fishes illustrated on your stamps and this will also increase your knowledge. You will also find that your general knowledge of geography and currencies increases.

Your collection will contain a great deal of information which should provide you, your family, friends and fellow aquarists with a great deal of pleasure.

You will no doubt wish to take your collection along to your local aquarists' society and reflect on it with your fellow aquarists. An aquarists' society library could be expanded to include a loose-leaf ring-binder and stamp album, while stamps could be collected by a number of members, each with different interests and/or expertise, with the stamps being collected on a joint basis with the responsibility for building, arranging and maintaining the collection being shared.

Thematic stamp collecting on the theme of fish provides an opportunity to encourage people into the two very worthwhile hobbies of aquarium-keeping and stamp collecting, and may be of particular interest to teachers, parents and those trying to build up the junior membership of aquarists' societies. When awarding prizes at Table Shows and Open Shows, particularly for junior members, it may be worth including a set of fish stamps (obtainable from most large stations) which would introduce a member to the idea of thematic stamp collecting as an interesting activity thus making the aquarium hobby even more rewarding.

It may also become financially rewarding, since stamps as an investment are on the up after a few years in the doldrums.

USEFUL ADDRESSES

Harry Allen, International Philatelic Distributors, Rickmansworth, Herts, England WD3 1EY.
Stamp Bug Club, Freepost, PO Box 109, Penn, High Wycombe, Buckinghamshire, England HP10 8BR.
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Coldwater jottings



Stephen J. Smith

Farewell to a friend

This month's *Coldwater Jottings* is dedicated to the late **Tommy Sutton**, who died recently, aged 77. Tommy was a great personal friend and inspiration: not only to me, but to Goldfish keepers throughout Britain.

The senior member of the Midlands-based father-and-son partnership, Tommy was highly respected by everyone involved in the coldwater scene. He was responsible for some of the finest Goldfish in Britain and, over the years, the majority of winners on show benches throughout the country were the progeny of Tommy's fish, produced during a lifetime of dedication and hard work.

Tributes from some of the major Goldfish societies and individuals hold a common thread: he was the hobby's greatest friend.

Jim Amos, of the **Association of Midland Goldfish Keepers** and the **Goldfish Society of Great Britain**, provides this personal insight: "Tommy first became interested in keeping fish as a boy of thirteen, when he obtained his first Goldfish from the rag-and-bone man."

He continues, "After some time he obtained further Goldfish and set up a pond using water plants which he pulled out of the river. He was eventually thrilled to see a little fish swimming among the plants



STEPHEN SMITH

A great friend and an inspiration to all Goldfish keepers, Tommy Sutton, who died recently, aged 77, had a lifetime's experience of breeding Fancy Goldfish. "I never read a book in my life," boasted Tommy, seen here with young Bristol Shubunkins, of which he was justifiably proud.

and, at first, thought his fish had bred; however, he soon realised that the small creatures were baby newts.

"This experience enthralled him and made him determined to breed fish. Over the subsequent forty years, Tommy Sutton was to breed and show fish in all the UK national shows, winning trophies in almost all the recognised varieties of Fancy Goldfish.

Farm

"Around twenty years ago, Tommy and his son **Tom** established a commercial fish farm in Water Orton, which has developed to produce thousands of high-quality Fancy Goldfish each season.

"Tommy achieved what hundreds of his friends all over the country dream about. In doing so, he became one of the most knowledgeable Goldfish breeders in the history of the hobby, and was, without doubt, one of the most colourful characters in the fishkeeping world.

"He was always willing to impart his experience to novices and seasoned aquarists, and his famous saying 'Cleanliness is next to Godliness' will always be remembered. Tommy will never be forgotten at AMGK and will be sadly missed."

Vic Capaldi, of **Bristol Aquarists' Society**, writes: "Coldwater fishkeepers throughout the West Country have

known Tommy for over 40 years. He was a very active member of the former **Midland Aquarist and Pond Society** in Birmingham, and was always willing to give good solid advice to old stagers and beginners alike.

"Tommy was the number one Fancy Goldfish breeder and will be sadly missed by all Goldfish keepers."

Bill Leach, on behalf of **South Park Aquatic (Study) Society** writes, "Tommy Sutton's name will live on through the fish he has left us. Over the years he produced more Goldfish than any other individual in England, and his stock forms part of numerous strains throughout the country.

"He was one of the real characters of the Goldfish world, who always had a cheery smile and a word of advice for all members of the Goldfish fraternity."

Personality

"The passing of Tommy Sutton is a great loss for the aquarist world, both as a pioneer of Goldfish farming and as a great Midland personality," writes **Harry Berger** of the **Goldfish Society of Great Britain**.

"Over the years, our members have been made most welcome on our visits to Birmingham. I, like many of our own members, have known Tommy from his

early days in the hobby and we have always admired him for his hard work and enthusiasm."

Another stalwart of the Goldfish scene is **Bill Ramsden**, of the **Northern Goldfish and Pondkeepers Society**, who has known Tommy for over 30 years. He will remember the earliest days of the gathering of Goldfish enthusiasts at the old Bingley Hall, in Birmingham, where he first met Tommy Sutton.

"This man was second to none when it came to selecting and breeding Goldfish," said Bill. "Tommy's name is synonymous with Goldfish wherever coldwater enthusiasts meet. There can be few ponds or aquariums which have not been stocked with, or have originated from, Tommy's fish."

"Tommy would proudly tell you how many fish he had spawned and how good they were, in order that others could share in his achievements, and he would always give credit, encouragement and words of wisdom to less experienced breeders who had struggled to produce a few nice fish.

"He will be truly missed by all the members of Northern Goldfish and Pondkeepers Society."

Finally, on behalf of all who knew Tommy Sutton, I would like to convey our deepest condolences to his widow and two sons.

THE BOLIVIAN RAM



DENNIS BARRETT



DENNIS BARRETT

Above, *P. altispinosa* male — note the red-edged, sail-like dorsal fin and the two red caudal fin margins.

Below left, by comparison, *P. altispinosa* females are duller than males in colour.

Left, a male Ram, *Microgeophagus ramirezi*. Note the red eye, slimmer body and fainter red fin edges. Rams are also smaller than their Bolivian counterparts.

Below, a female Bolivian Ram (slightly out of focus) guarding a batch of eggs laid in typical substrate spawner fashion.



DENNIS BARRETT



DENNIS BARRETT

Dennis Barrett, of Belton Fish Farm, is among the first aquarists to breed the Ram's Bolivian cousin on a regular basis in the UK. Unlike many other "new" species, this small cichlid seems quite hardy and easy to keep and breed. Read on . . .

P*pilochromis altipinosa*, the Bolivian Ram, was first described in 1911 by Haseman as *Crenicora altipinosa*. After a time gap of 55 years, it was again collected (this time by K. H. Luling of the Alexander König Museum in Bonn) in 1966 in the Todos Santos area of Bolivia. On this occasion it was mistakenly identified as *Aspitogramma ramirezi* by Dr. Meinken, but in 1981, Kullander settled its true identity as *P. altipinosa*.

This "Ram" appears to be quite rare in its natural habitat which extends from Todos Santos to the north of Trinidad. In its natural habitat, it can attain a size of 2.75in. (7cm) but, in the aquarium, I would say that it would remain somewhat smaller.

I find *P. altipinosa* to be very territorially minded when fully mature and bouts of aggression between individuals can be witnessed all day long. However, in a well-planted tank with flat rocks and caves, they soon sort themselves out.

Aquarium spawning

In the many spawnings which I have observed, the pair has preferred a stone or a slate to lay their eggs on. The brood is cared for by both parents to begin with, the female looking after her eggs almost continuously, while the male, for his part, defends the brooding space. The larvae are looked after by both parents, the female doing most of the watching during the first 48 hours, after which the male tends to take over, hollowing small trenches out in the gravel, about 2mm in depth.

Rearing the fry

On average, about 150-200 eggs are laid, and almost all of them mature quickly at a water temperature of 80°F (c. 27°C). After 48 hours, the embryos break through the egg membrane and are transferred to one of the trenches by both parents.

From then on, it is difficult to keep track of the fry as they are transferred from hollow to hollow daily. The larval stage lasts for five days, by which time the fry can be seen swimming freely.

At this point, the male usually takes over, doing all the protecting of the fry and, more often than not, will even chase the female away, as well as any other fish which appear to pose a threat to the fry.

On odd occasions, though, I have found that the parents split the fry up and each looks after half the brood.

Once the fry are free-swimming, you will find that they will readily accept freshly hatched Brine Shrimp as their first solid food. You will also find that, after five days, they tend to wander away from the parents to do a little exploring on their own.

They are now easy prey and are easily picked off by any other fish that you may have in the tank. When this happens, I usually remove the fry and put them into a

smaller tank. In this way I can concentrate more food into them as they don't have to go far to look for it. By doing this, I can also save more fry from each spawning.

By the end of two weeks, you will find the fry taking on the shape of the parents, with more and more depth to the body and a long dorsal fin. As for the adults, they usually spawn again round about this time.

Water conditions

I don't think pH or hardness make a lot of difference in the breeding of *P. altipinosa*, as I have had success in both hard and soft water.

What I have found *does* make a difference, though, is the clarity of the water. Regular water changes are essential at least three times a week, with approximately a third of the water having to be changed on each occasion. In addition, a well-aerated tank seems to suit this species best.

By keeping the fish well fed on as much livefood as possible, I have had no trouble getting the adults to spawn.

Differences between Rams and Altipinosas

Although the Ram, *Microgeophagus ramirezi* and *P. altipinosa* have the same basic shape to their dorsal fin, I think that this is where the similarities end. *Altipinosa* is much deeper in the body than the Ram, and grows much larger when mature, around 2.75in (7cm) as compared to approximately 2in (5cm).

On the eye of *P. altipinosa*, the top part protrudes more than the bottom, whereas in the Ram it is just "normal". The vertical black line which runs through the eye in both species is also slightly different. On

altipinosa it starts at the bottom of the gill plate, goes through the eye (which is bright red) and stops at the top. Further, the line is offset approximately one eighth of an inch to the rear of the body. In the Ram it is a continuous vertical line through the eye to the top of the body, the eye being brown in colour.

The *altipinosa* basic colour is a yellow-to-pink background with one, or maybe two, black spots in the centre of the body. The pelvic (ventral) fins are red with blue irregular lines through them, and the anal fin has a number of blue dots on the last three or four rays. It also takes on a much rounder shape than in *M. ramirezi*.

The dorsal fin is clear in colour, apart from a black vertical line which starts at the first ray and works its way back to the fourth ray.

Right at the very tip of each ray is a vivid red spot, whereas in *M. ramirezi*, the basic dorsal fin colour has a yellow tinge to it and the first two rays are blue to black.

The caudal fin in *P. altipinosa* is also clear with a vivid red line on the top and bottom outer edges on both sexes. On the males there is also a slight extension of approximately one eighth of an inch of the red lines (this is the only way to distinguish between the sexes). *P. altipinosa* does not get the iridescent blue-to-green lines around the mouth that Rams develop. Neither does it get the iridescent blue-green sheen on the body characteristic of *M. ramirezi*.

All in all, *Papilochromis altipinosa* is a very welcome relative newcomer which is likely to become progressively more widespread in the UK as the numbers of commercially-bred specimens increase and make their presence felt.



Above, as soon as they become free-swimming, the fry are quite capable of taking newly-hatched Brine Shrimp.

Right, full stomachs show that these two-weeks-old fry are being well fed. Even at this early stage, some colours are beginning to develop, particularly on the cheeks.



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, c/o Dogworld Ltd, 9 Tufton Street, Ashford, Kent TN23 1QN.



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MARINE
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DISCUS
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Coldwater

Cool Cats

Is it all right to keep Bronze Catfish (Corydoras acneus) in my coldwater tank as long as the water is kept at room temperature (the room is heated by means of a gas fire)?

Bronze Catfish are peaceful, hardy and therefore quite easy to keep in aquaria. They will tolerate a wide range of conditions and will be happy kept in a temperature range of the mid-sixties to the upper seventies (18-26°C). These conditions also suit Goldfish, but I, personally, prefer not to mix, but rather to keep Goldfish with their own kind.

Pox problem

Some of my Mirror Carp and Koi have developed Carp Pox over the past two winters, while my other fish have been unaffected. I can find very little on this disease — your help would, therefore, be much appreciated.

Unfortunately, I am not able to suggest an effective chemical treatment for fish suffering from Carp Pox. The cause is a virus and it appears that some individuals are more susceptible than others.

It is believed that crowded conditions help to bring on an outbreak, so stress could reduce

The dorsal fin and back of this fish show the characteristic "waxy" texture of Carp Pox.

your fishes' resistance to this condition. Always make sure that the environment is clean and water quality is at its best. Raising the temperature to about 70°F (21°C) may bring about a quicker recovery, but the symptoms may reappear if previously affected fish are at a low state of health or under stress.

Goldfish and pH

How important is pH to the well-being of Goldfish?

Newcomers to the Goldfish hobby rather tend to fuss about the chemistry of the water, taking constant readings of pH level. In fact, the Goldfish can tolerate a wide range of conditions and temperatures, and I do not know of one advanced aquarist who concerns himself/herself with the pH factor.

You are quite right when you assume that the fish will be fine just as long as the water is

clean and free from pollution and is suitably aerated.

Koi

To breed . . . or not to . . .

I have two six-inch, two-year-old Koi in a 15-gallon aquarium. Will I be able to breed them under such conditions (assuming that they are old enough to do so)?

In answer to your question about whether your two Koi are old enough to breed, I am afraid that the answer is no. Koi need to be about three years old to breed and they should be at least 10in-12in (25-30cm) in length by then. Although Koi could be bred in a large enough tank, it is usual to use either a special Koi spawning pool or their usual pool if some form of spawning

medium is added.

Your 15-gallon (68-litre) tank would, I am afraid, be a totally unsuitable vessel in which to attempt to breed Koi. It is, in fact, not even really a suitable tank in which to keep your Koi for any length of time, especially as you have another five Goldfish in there with them. A 15-gallon tank is only really large enough to keep either your Goldfish on their own, or your two Koi on their own if you want to keep them in their best condition. Even then, your Koi will soon outgrow their home and you will need to find somewhere larger if their health is not to suffer.

I am sorry that I have to give such disheartening information, but I am sure you will want to look after your fish in the best possible way. Koi, unlike Goldfish, usually manage to outgrow any small container in which they are kept very quickly, and to keep them in overcrowded conditions will soon lead to a deterioration in their health.

Discus

Angels and Discus don't mix

Is it wise to keep Angelfish with Discus in a 36 x 12 x 21in aquarium?

The short answer is NO. Although many hobbyists do keep Angelfish and Discus in a mixed aquarium, it often results



DR ANNE POWELL — HAMBLET PARTNERSHIP

in 'sulking' by the Discus, or even in death.

Large Angelfish usually become very aggressive and, as a result, the more gentle Discus will hide away; but more important, Angelfish are carriers of certain diseases which will almost always result in the loss of the Discus, while the Angelfish show no outward signs of any ailments at all.

Plants

Lowering the pH

The normal pH in my tank is between 7.3 and 7.5. I have been using sodium acid phosphate in order to lower this value to 6.8-7.0 for my plants. Is this safe?

I would say that the use of sodium acid phosphate should have no harmful effects, provided you carry out regular partial water changes.

Tropical

Breeding Jewels

I have two anabantoids which I believe are called Jewel Gouramis. What is the ideal set-up for breeding this species?

The Jewel Gourami is not a recognised name for any Gourami. From your description you could have a *Trichopsis schalleri*, the Sparkling Pigmy or Schaller's Gourami, or *Trichopsis vittatus*, the Croaking Gourami.

The fish will breed in the aquarium in a typical Gourami way. You must have a separate tank to isolate the pair, but it need not be a large one. Supply some floating plants because the male likes to build a nest under a leaf or log. If, by chance, the pair do spawn in their community tank the nest with the eggs can be scooped out into a saucer and floated in a spare tank until they hatch. The spent female should be removed; the male also after the fry have hatched.

The fry are very small and infusoria cultures must be prepared. After a few days on the infusoria diet, fine fish food can be given. Growth is rapid



and the fish will soon take ordinary flakes, plus freshly hatched Brine Shrimp.

Be careful to keep the temperature up (80°F — 27°C), especially above the water surface. Do not remove the lid or allow cooling draughts to reach the surface, or the fry may be chilled and start dying off.

Breeding Congos

How do I go about breeding Congo Tetras?

The Congo Tetra, also called the Congo Salmon, is *Micralates interruptus*. It is also named *Phenacogrammus interruptus* by some authorities.

The fish is from Central

Africa, particularly the Congo Basin, where it lives in soft, slightly acid waters in dense vegetation at temperatures around 75°F (24°C). The natural diet is insects, but the fish will take flake foods.

To breed this species reproduce the natural conditions and include good swimming space. Group breeding is best with two males and four females (the females are smaller and less colourful). The parents do not look after the eggs or fry, but do not eat them either! The eggs are non-adhesive sinkers

and hatch in about five days. The free-swimming fry will take freshly hatched Brine Shrimp and fry foods.

If the fish require conditioning to encourage breeding, try Black Mosquito larvae — their favourite natural food.

Do not include catfish or other scavengers — these will discourage breeding and will certainly eat the eggs and fry.

Marine

Stock answer

As a newcomer, I would welcome advice on how to go about stocking my 48in x 12in x 15in tank. I would like to include fish (some small — 3-4in — and a bigger one), plus invertebrates, including living rock.

This is always a difficult one to answer due to the fact that different people assess beauty differently. However, your aquarium will only contain approximately 26 gallons of actual seawater (gross capacity = 31.25 Imperial gallons = 140 litres) and so, as a raw beginner, I strongly advise as follows:

(i) First mature the stockless tank until there isn't a trace of nitrite toxins in the water. For this you will need something like 'SEAMATURE', or some other proprietary brand of filter bed maturation liquid, and a nitrite test kit.

(ii) Now do a 50% partial water change to dilute excess nitrates.

(iii) Add one, only, small Electric Blue Damsel, or small *Monodactylus argenteus* (Malayan Angel) or small Scat, together with a small amount of living rock. By small, I mean a piece no larger than a grapefruit. Spend the next 3-4 months learning how to feed this fish without causing a return of free nitrite toxin. During this period gradually add the remainder of the living rock.

(iv) Now buy two medium-sized *Him Sebae Clowns* or *Xanthurus Clowns* or *Teak Clowns* (— these are tough and the ideal species for a beginner) together with a medium-sized *Radianthus Anemone*.

(v) You must not exceed a stocking level of 1in of fish per each 4 gallons of water for the first 4 months after the nitrites disappear. Thereafter, 1in of fish to each 2 gallons of water is the absolute maximum stock limit.

COMPETITION WINNERS

EHEIM COMPETITION

(Sponsored by John Allan Aquariums Ltd)

If the massive flood of entries we received for our October easy-to-enter competition is anything to go by, then Eheim have, yet again, come up with just the right new range of products at just the right time. Unfortunately for most, there could only be 10 lucky winners:

FIRST PRIZE (2317 Thermafilter, plus extras) Nigel Keen, Tamworth, Staffs.	SIXTH PRIZE (2213 Filter, plus extras) Omar Ibrahim, Lee, London
SECOND PRIZE (2217 Filter, plus extras) Joseph Scott, Chivwell, Notts.	SEVENTH PRIZE (2011 Filter, plus extras) J. Waugh, Copar, Fife
THIRD PRIZE (2315 Thermafilter, plus extras) Mrs E. Carr, Warrham Cross, Herts.	EIGHTH PRIZE (2209 Filter) Miss S. Thompson, Uckfield, East Sussex.
FOURTH PRIZE (2215 Filter, plus extras) Andrea Miller, Yoxford Meurig, Dyfed.	NINTH PRIZE (2003 Aqua Box Filter) P. Waring, Bolton, Lancs.
FIFTH PRIZE (2313 Thermafilter, plus extras) Keith Williamson, South, Merseyside.	TENTH PRIZE (2007 Filter) M. Hughes, Penrath, Gwynedd

Congratulations to all our lucky winners and sincere thanks to John Allan Aquariums Ltd. for their generous sponsorship.



Close-up of an adult *Uaru* showing the powerful jaw possessed by this species.

CLOSE-UP ON UARUS

Discus are not the only cichlids which produce parental body slime for their fry to feed on — *Uarus* do the same as this interesting article from Danish aquarist **Jørgen Wimo** reveals.

For many years aquarists have been of that opinion, that only the Discus from South America and *Etoplois maculatus* from Asia nourish their fry during first few weeks by means of a parental slime. Experiments from the 1960's have, however, shown, that nearly all American cichlids are able to nourish their offspring by means of a slime which the parents secrete from the body.

One can divide the cichlids roughly into three groups:

- 1) Cichlids which exclusively nourish their offspring by means of parental slime during the first couple of weeks. eg. The *Symphysodon* genus (Discus) and *Uaru amphiacanthoides*.
- 2) Cichlids which, when food for the fry is scarce, allow their offspring to nip parental slime from the body, but in which exclusive feeding on parental slime does not occur.
- 3) Cichlids which don't take care of their fry when they are free-swimming.

Name Origins

The first place where one could read about *Uaru amphiacanthoides* was in the famous work "Johann Natterer's Neue Flussfische Brasiliens", which was written in 1840 by the ichthyologist Jacob Heckel from Vienna. The description was written in Latin (see the footnote).

It is most likely that the genus *Uaru* is monotypical, which means that there is only one species in the genus. There exist two other descriptions: *Uaru abicarium*, Guenther 1862 and *Uaru imperialis* (Steindachner 1879), the last mentioned being originally described as belonging to the genera *Acara* and *Heros*. The name of the genus *Uaru* is taken from the Brazilian where *Uaru-ura* means "bird-toad". The name of the species, *amphiacanthoides*, can be split up into parts: *amphi* — is Greek and means "around" or "on both sides", —*acanth* — is Greek and means "thorn", —*ides* — is also Greek and means "looking". Put together, *amphiacan-*

thoides means: "On both sides thorn-looking." The thing which, on both sides looks like a thorn is the black marking.

The name *Uaru* is quite common in the trade and may be the best name for this cichlid, so nobody is in doubt about which fish they are talking.

Natural distribution

This cichlid lives in the middle Amazonas in the Rio Negro and Guayana, where the water flow in the rivers is slow and where the vegetation is heavy.

One can find it where roots, branches and fallen trees create good hiding places, the temperature is between 26-29°C (79-84°F), the hardness of the water is 0.1-0.5° DH, and the pH value is from 3.8-4.7. Other cichlids like *Symphysodon discus* and *Pterophyllum scalare*, also occur at the locations in nature where *Uaru amphiacanthoides* is found.



Wild-caught *Uaru* (like these four specimens) often sleep in groups under any available shelter.

Vital statistics

The body of *Uaru amphiacanthoides* is rather tall and compressed, and it is longer than it is tall. The basic coloration is yellow-brown, but with more brown on the upper part of the body and more yellow on the lower. The eyes are nearly luminous red or orange-red. Approximately 1cm (0.4in) below the distinct upper lateral line, there is a large black spot. At the base of the tail there is another black spot and the pelvic (ventral) fins are also black. There are no significant differences between males and females.

The technical data on this cichlid are as follows:

	Spiny fin rays	Soft fin rays
Dorsal fin:	XV-XVI	14-16
Anal fin:	VIII	13-15
Lateral line scales:	40-42	

According to where one seeks the information about this cichlid, one can read that it can attain a size of 25-30cm (10-12in) and that 35cm (14in) should not be impossible in a large aquarium.

Plant eating habits

Uaru have not been imported very often so knowledge of their behaviour is not widespread. As a result new owners of this cichlid often get a surprise.

Once, when giving a lecture on cichlids in another town, an aquarist told me that he had bought some *Uaru amphiacanthoides* and had put them in a 500-litre tank (132 gal) exclusively planted with *Anubias nana*. It only took these cichlids a week to eat all the plants.

Uaru amphiacanthoides like plants very much since they represent their main source of food. If one collects live food for one's fish, one can hardly avoid getting some Duckweed in one's aquarium. After a little while, the whole surface is covered with a thick layer of Duckweed. However, if one is the happy owner of some *Uaru amphiacanthoides*, then they will eat the Duckweed with great pleasure.

If Duckweed is not available, then deep frozen peas will do as an excellent substitute. Adult *Uaru* will swallow the peas whole and

the pharyngeal teeth will tear them up. Young fish cannot swallow the peas but will bite them with their large teeth and then do a quick jerk with the head so that the peas will break and they can easily eat the small bits.

The teeth of this fish are worthwhile studying. Both in the upper and lower jaw there is a row of large conical teeth, the colour of which is brownish and darkest at the tip. The pharyngeal bones further inside the mouth also have lots of teeth. These bones are placed opposite one another, so all the food taken by the fish will pass the teeth and be rasped into small bits.

Other dietary components

One can vary the diet of the fish by feeding with animal food. Minced ox heart, mussels, shrimps, *Mysis*, earthworms and lots of other things will be taken but, in all cases, one has to remember a very important thing. These must be tree roots in the aquarium to create hiding places, and most important, so that the fish can rasp wooden fibres of the tree roots with their large teeth when they are being fed with meat. These cichlids need the wooden fibres to help them digest the meat.

Spawning

After a varied diet, and maybe a change of water, the fish might spawn. The female develops a large whitish breeding tube 3mm wide, 5mm long (0.1-0.2in) and both fish start cleaning a stone and digging in the bottom layer of the tank.

The eggs are laid in a typical substrate laying cichlid manner. First, both male and female take a turn over the stone, but without any eggs being laid. When they are eventually produced, the eggs are 2mm in diameter, sticky and yellow. Often, they are laid in a series of 10-12. The largest number of eggs my fish have ever spawned was nearly 100. The spawning site was, in all cases, beneath a root, in what looked like a cave.

At one time my male *Uaru* died and I got a new one from a public aquarium. The day after the male and female had been put

together they spawned, but two days later the eggs had disappeared. Two weeks later the fish spawned again, but this time the male ate the eggs as fast as the female laid them. This made me wonder if the male was, in fact, a male. Then nothing happened for two months until, suddenly, there were eggs on the usual place.

It had been a hard two months for the female. The male had been bounding her and she had big scratches where his teeth had scraped her, but now everything was happiness, and both parents looked after the eggs.

Two days later the eggs had disappeared from the stone, and two days further on, I observed small black fish larvae on the bottom of the tank. Eight days after the spawning, small baby fish were swimming just below the female, who looked after the fry while the male watched passively.

Both parents had developed a greyish layer on the body, most prominent on the upper half of the body. During the following days the fry were never left on their own; there was always an adult right over them. The baby fish swam up to the parent and ate from the parental slime which the adult fish produced.

Only the adults were, consequently, fed, while the fry had to make do with the parental slime from the parents and, maybe, the remains from their parents' meal. The fry grew at an astonishing rate, as the following notes which I made at the time show:

Date:

8-2: The fry are free-swimming. Size 6mm (0.24in).

13-2: The fry have a black marking on the body. Size 8mm (0.31in).

21-2: Size 12mm (0.47in).

20-3: Size 30mm (1.2in).

It is not only the *Uaru* baby fish which like parental slime. When I was taking Duckweed from other tanks and putting it into the tank of the *Uaru* pair, it often happened that some new-born baby fish of livebearers were accidentally put into the cichlid tank.

The large cichlids did not touch these small fish, which grew bigger very fast. At the beginning it surprised me that these small fish could grow that big on the remains of the large cichlids' meals, but one day I found the explanation. These livebearer fry swam up to the *Uaru* parents and ate the parental slime! Even while the *Uaru* pair had baby fish, these other fish also got a "home made" meal everyday.

Uaru fry do not look like the adults at all. The basic coloration is brownish and the body is speckled with irregular stripes and greenish iridescent spots. It is only at an age of 10 months that they start looking like the parents.

Footnote: (Original Latin description of *Uaru* written by Heckel in 1840). "Corpus compressum, elevatum. Capite elevato, brevi; fronte subrecta. Macula magna, elliptica, obscura a pinna pectorali usque ad pinnam caudalem; macula minore nigra pone oculum; altera in angulo pinnae pectoralis; tertia tandem, ad basim pinnae caudalis."

PRODUCT ROUND UP

BY DICK MILLS

NEWS FROM THE SHOWS

HAGEN NEWS

There is mixed news this month from **ROLF C. HAGEN**. The positive news is that they have moved to new premises at **CALIFORNIA DRIVE, WHITWOOD INDUSTRIAL ESTATE, CASTLEFORD, WEST YORKSHIRE WF10 5QH** (Tel: 0977 556622. Fax: 0977 513465) where planned expansion for at least double capacity has been envisaged.

The less good news is that their Product Catalogue referred to in a recent **Product Round-up** (*A & P* September) is not available to individual hobbyists but only to the Trade. We regret any inconvenience caused to the Company and for any disappointments caused to private enquirers in this latter respect.

The last part of September saw the poor old Trade Reps (and eagle-eyed *A & P* reporters) harrying around the country like the proverbial blue-anatomised insects: two important Trade Shows occurred over the same weekend — **GLEE** at Birmingham and **PTIE** at Alexandra Palace. Both events threw up interesting new products and reinforced the feeling that the fishkeeping hobby is very much an active, progressing one.

BATSFORD PRODUCTS

Holding back the slope of terraced gravel used to depend on buried pieces of rock. Now you can achieve the same 'tiered' effect and make good use of the rocks' appearance at the same time, but there's a slight difference — the rocks aren't real. **SIMLAWOOD/SIMLSTONE** are realistically modelled aquarium decorations of long-standing reputation. Two most recent releases are **ROCK PLANTERS**. The larger **PL2** model is 25cm (c 10in) long and slightly curved in shape: behind the rock design façade (coloured in stone and green hues) there is a receptacle for approximately a 5cm (2in) depth of gravel or other planting medium. The smaller **PL1** is straighter and 20cm (c 8in) long.

Advantages of using these planters is that specimen plants can both remain undisturbed when the aquarium decorations need to be re-arranged, or to protect them from 'adverse' effects of sub-gravel filtration. Details of Simlawood and Simlstone (there's models to serve hardware-hiding purposes too) from: **BATSFORD PRODUCTS, 15 Abeles Way, Holly Lane Industrial Estate, Atherstone, Warwickshire CV9 2HA.**

CASTLEMERE

Readers who were left somewhat drooling over previous **CASTLEMERE** high-quality aquarium cabinets, can find comfort in the fact that the same superior workmanship has been extended to a slightly more easily-affordable **CLASSIC** range. There are two sizes available: 36in (90cm) and 48in (120cm). The new satin finish and solid wood veneered cabinets have a rear access for the tank to slide in; wood finishes available are Mahogany, Black Ash, Teak and Light Oak.

Let's you think that Castlemere's expertise is limited to cabinet-making, then a glance at the advertisement pages in *A & P* will reveal that they are also into handling fishes in no small way, but unfortunately this side of their business is strictly trade only.

Details of aquarium cabinets from: **CASTLEMERE, Home-mead Farm, Ongar Road, Standon Massey, Essex CM15 0LD** (Tel: 0277 824011. Fax: 0277 824462).

EURAQUARiums

The Italians have long been famed for their flair in design, especially in exotic cars such as Ferrari and Lamborghini. Now a whole range of 'just add a plug' very stylish aquariums have come on to the market. The **EURAQUARiums** certainly attract attention and the designs prove that, in order to solve technical problems, the equipment doesn't have to look austere and primarily functional. In fact, most of the equipment is hidden away from direct sight.



The Vogue 830 and Broadway 990 — just two of Euroaquarium's range of stunning models.

Some models (**TIFFANY 3** - 200 litres (c 45 gals) and **TIFFANY 4** - 350 litres (c 78 gals)) have apparently rounded corners and this illusion is strengthened by the rounded glass 'table-top' which can be added. In fact, the corners of the tanks are slim flat sides, the tanks actually having eight flat vertical surfaces. Similar treatment of corners has been given to the triangular, corner aquarium, the **DELTA** which holds 150 litres (33 gals). More traditional 'oblong' tanks include the 40 litre (9 gals) **DARLING 505**, 52 litre (11½ gals) **AQUAR**, 85 litre (19 gals) **KISS 707**, 125 litre (28 gals) **VOGUE 830**, 186 litre (41 gals) **BROADWAY 990** and the 297 litre (66 gals) **ATOLLO 1200**. (The figures following the model name refer to the approximate length of the tank measured in millimetres.)

Further to the 'total technology' incorporated in each aquarium, provision has been 'designed in' for the addition of even more high-tech equipment such as automatic feeders, timers and a third lamp for intense-

light-loving plants. All hardware is hidden away in a slim black panel at the end of each tank. Each tank has two lamps — a phyto-stimulating lamp in addition to the normal daylight type. The electrics in the hoods look well protected and will, according to the suppliers, meet the demands of the most stringent tests.

With the exception of the **AQUAR**, which comes in grey, all other models have smart black trims (the **DELTA** is also available in brown), so you will have no problem in choosing colours — like Henry Ford said, "You can have any colour you like, as long as it's black!" All the aquariums, except the **AQUAR** and **TIFFANY** models, have associated cabinets; **TIFFANY** models have table-tops and chrome supports. Details of these stunning aquariums from: **EURAQUARiums, Unit D2, Meadow Lane Industrial Estate, Alfreton, Derbyshire DE5 7RG** (Tel: 0773 520403).

INTERPET

Delving into the occult after 35 years seems an unlikely situation for any self-respecting aquatic manufacturer but, at first sight, that's exactly what **INTERPET** seems to have done! However, the only **SUPERNATURALS** the boys at Dorking have researched (and perfected) are their new range of artificial plants. These come in 5 sizes and 6 amazing colours — truly out of this world!

Very often filters cannot quite get to grips with suspended material in the water to everyone's satisfaction. **FILTER-AID** helps to overcome this by helping to bind together the unwanted, unsightly cloudiness in the water so that it can be more effectively trapped by the filter medium. Adding 1-2 drops per 20 litres (c 4 gals) will result in much clearer water with a definite 'polish' to it, previously up to now the sole province of diatomaceous filter materials. Looking ahead to next spring, the **POWER-STREAM 600 FOUNTAIN KIT** will enable you to get more exciting features into your

pond with the minimum of both initial outlay and subsequent running expense. Complete with a waterfall off-take, extendable fountain pipe and a choice of two heads, a meagre 10 watts of electricity will send a fountain jet up to 7500mm (c 30in) high — even at a distance of 100 metres (330ft) from the power outlet as no significant power losses are incurred in the 5 amp cable. Even if your garden is not of that proportion, you can use the fountain in an indoor situation without too much splashing about occurring, as the fountain flow is reducible. Retail price is £29.95. Details from: **INTERPET LTD, Vincent Lane, Dorking, Surrey RH4 3YX (Tel: 0306 881033).**

NEW TECHNOLOGY

FILT-ROX are both aquarium decorations and, in smaller particle sizes, efficient filter media. The large pieces range from 50-200mm in size (2-8in), while the granule sizes (G5, G10 and G15) are 1-5mm (0.04-0.2in), 5-10mm (0.2-0.4in) and 10-15mm (0.4-0.6in) respectively, the last size being especially recommended for pond filters. All are available in red, white or brown inert material and will add nothing but good looks to your aquarium. Details from: **NEW TECHNOLOGY LABORATORIES LTD, 13 Branbridges Industrial Estate, East Peckham, Kent TN12 5HF (Tel: 0622 871387).**

OLD STONE PRODUCTS

'Designer gardens' are becoming the vogue and many an old stone sink has been pressed into service as a miniature pool or planter. Quick to realise that especially created containers from natural material both look and work better, **OLD STONE PRODUCTS** have come up



Drilled boulders for the imaginative aquatic garden designer

with stone troughs, mini water gardens, bird baths and drilled boulders for imaginative fountain and aquatic designs. Package deals include sunken 12in (30cm) deep tank, pebbles, drilled boulder and pump. Delivery service is available for 'too heavy to transport by normal means' items. Coloured leaflet and price list from: **OLD STONE PRODUCTS LTD, Willow Cottage, Rose Farm, Dodleston, Chester CH4 9NG (Tel: 0244 660222. Fax: 0244 314635).**

REMANOID

Should the pond-owner feel withdrawal symptoms coming on strong during the winter months, help is at hand. No longer need noses be pressed up against the double-glazing, nor wistful glances be cast gardenwards, for you can have all the sounds and movements of the water gardens indoors. The **AQUARIUS** range of hand-crafted ornamental fountains can be displayed indoors and out, and come complete with pump, vinyl tubing, flow restrictor and pump cover. They are fabricated in brass and copper (don't worry, you're not expected to keep fish in them) and the designs are based on a scallop-edged container in which reeds, lily-pads and swamp-leaved plants (also modelled in metal) are displayed. In the larger displays a cascading water stream runs through a series of lotus leaves. Apart from being extremely decorative, these displays also act as very effective humidifiers.

Also on show at recent trade exhibitions were the latest additions to the prefabricated pool range, each moulded in brown material, complete with 'rock effect' finish. A fuller survey of products will follow early in 1989. Details from: **REMANOID LTD, Unit 44, Number One Industrial Estate, Medomsley Road, Consett, Co Durham DH8 6SZ (Tel: 0207 591089. Fax: 0207 502512).**

RENA

The latest filter from **RENA**, the F60, is centred around the immensely powerful C60 resin-sealed motor unit. Of advanced 'space-age' design and performance, this filter will turn over around 2,000 litres/hour — c 450 gals — (the pump has a 'head' capability of 3 metres — 9.8ft). Due for imminent release, this filter will appeal to

larger aquarium, and pond owners.

The **215 UNDERGRAVEL FILTER** can be tailor-made to suit almost any aquarium-dimension requirement. The individual filter plates measure 140mm x 70mm (2.75 x 5.5in) and lock together as needed;



Rena's latest — the space-age F60 filter.

the height-adjustable airlift tube can be located at one end of any plate. When connected to a suitably-sized airpump (Rena 101) turnover rate is up to 400 litres/hour (c 90 gals). With powerheads (Rena C20, C40) flowrates are in the region of 300-600 litres/hour (approx 66-130 gals). Details of all Rena Products from: **RENA U.K. LTD, The Bury Farm, Pednor Road, Chesham, Bucks (Tel: 0494 786759. Fax: 0494 791617).**

SERA

The familiar undergravel biological filtration system may appear to work perfectly well for most aquarists, but in truth, it is only really half the story. The externally-mounted, trickle-fed **TITAN BIO-DENITRATOR** continues where 'undergravels' leave off, reducing nitrate levels in the water even further. This means that nitrate accumulation does not occur, and while the need for partial water changes are not obviated entirely (three times a year is said to become the norm), optimum water conditions are stabilised for longer periods, with resulting healthier fish and plants.

All that is required to maintain the Bio-Denitrator at peak

performance is the daily addition of **BIO-NIP** food for the bacteria and a regular (monthly) short flush-through with aquarium water from the power filter.

Both the means to check water conditions and to treat diseases are comprehensively covered by the **SERA AQUA TEST SET** and **MEDICATION SET**. Both are housed in handy cases and will make very welcome presents this Christmas time.

Ask your dealer for the Sera range of **ADVISER** and **GUIDE** Booklets. These are excellently produced, full-colour publications on all aspects of fish- and reptile-keeping. Details of all Sera products from: **BETTER WATER GARDEN PRODUCTS, Blagdon Water Garden Centre, Bath Road, Upper Langford, Avon BS18 7DN (Tel: 0934 852973).**

BRYAN SHARPLES MARKETING

A new fish food also appeared on to the scene at Alexandra Palace. The name **LAPIS** is usually associated with the gemstone Lapis Lazuli, but in this case it is the brand name of a range of Flake and Freeze-dried foods. It has been available in Germany for some time under the equally precious stone name of **GEM**. Varieties include Staple Food, Goldfish Food, Conditioning Food, Red Mosquito-larvae, Tubifex, Brine Shrimp and so on. Pond fish are also catered for with Flake and Granule foods or, if you want to catch your own live foods, an extendable Pond- or Daphnia-Net could be just the thing. Details of Lapis products from: **BRYAN SHARPLES MARKETING, 2a Post Office Avenue, Southport, Merseyside (Tel: 0704 44662).**

TECHNICAL AQUATIC PRODUCTS

In addition to their complete range of **MEDICATIONS, WATER TREATMENTS** and **TEST KITS, TECHNICAL AQUATIC PRODUCTS** have launched their own biological filter system. Based on small individual plates which lock together as required, a feature is the non-rigidity of the material used. This is to overcome the tendency of the plastic to become brittle and crack apart over long periods of immersion and under the considerable weight of gravel and

rocks. The airlift can be located on any plate, obviating the obligatory corner position, so making the fitting of a power-head maybe a little more convenient in these days of glass-ledge reinforced, all-glass tanks.

The ULTIMATE SOLUTION complete range of water treatments and medications comes in new packaging for easy identification and the popular 'ALL IN ONE' water conditioner and dechlorinator is now available in the 250ml Easy-Dose bottles. Details from: TECHNICAL AQUATIC PRODUCTS, 542 Filton Avenue, Filton, Bristol BS7 0QG (Tel: 0272 692345/799852. Fax: 0272 298475).

TETRA'S LATEST MARINE SELECTION

With interest in marine fish-keeping relentlessly increasing, TETRA have introduced three new products especially for use in the marine aquarium. *Oodinium* has always been a common ailment amongst marine fishes, in much the same way that *Ichthyophthiriasis* is ever likely to attack freshwater species. The problem has always been how to beat the disease without harming the fish and invertebrates.

TETRA MARIN OOMED is non-copper based and, consequently, may be used in invertebrate-inhabited aquariums with safety. In addition, the degree of dosage also depends on the inhabitants of the tank, and there are separate levels of treatment for use in fish-inverts-coral, fish-inverts and fish-only situations.

Because of the remedy's ease (and safety) of use, there has been a big demand, but Tetra are doing all they can to maintain supplies. In fact, by the time you read this, stocks should be up to full strength at your dealer once more.

For feeding medium-sized and larger fish, TETRA DORO MARIN is formulated in a slightly different way to other foods, resulting in slow-sinking granules that go by the apt and descriptive name of 'Sinking Morsels'. Because of the critically designed sinking rate, the granules are not snapped up by surface feeders after minutes of floating, nor sink so swiftly that only bottom-feeders benefit. This therefore allows sufficient time for the midwater swimmers to seize the granules before they reach the tank floor.

Maintaining optimum marine aquarium water conditions has always been the secret of success, and Tetra's MARINE VITAL is a water conditioner that replaces much of the beneficial trace elements that are often lost from the water after prolonged periods of time. It is a two-bottle addition (added in equal quantities) and replaces iodine compounds and vital elements in the Vitamin B complex. For details contact: TETRA (UK) LTD, Lambert Court, Chestnut Avenue, Eastleigh, Hampshire SO5 3ZQ (Tel: 0703 620500).



BOOKS FOR CHRISTMAS



An Interpet Guide to Fancy Goldfishes.

Following last year's selection it occurred to me that my choice might not be quite the same as everybody else's (I have these delusions of inferiority now and then), so this year I'm taking no chances and thought I'd share the blame with no less personages than the Editor himself, John Dawes, and Stephen Smith (*Coldwater Jottings*).

Like the wide-held belief of all Texans, big seems to be best yet again, and the two ATLASES from TFH are both remarkable *tours de force*: consulting the DR BURGESS'S *ATLAS OF MARINE AQUARIUM FISHES* enabled me to name many of my slides taken at odd moments around the shops and shows, and John was very taken with the corresponding volume, *COMPLETELY ILLUSTRATED ATLAS OF REPTILES AND AMPHIBIANS*. Looking on the green side of things, Ward Lock's volume on *AQUARIUM PLANTS* by Robert Allgayer and Jacques Teton is another

book well-worthy of bookshelf space.

For specialists, three titles vie for more than passing attention. *TANGANYIKA CICHLIDS* by Ad Konings (*Verduijn Cichlids*) attracted another rave review from John as did *DISCUS (King of All Aquarium Fishes)* by Eberhard Schulze (*Discus Ltd*), helping to maintain the reputations of 'home-grown' books.

Coldwater fishkeepers were well served with *KOI VARIETIES — Japanese Coloured Carp* by Dr H. Axelrod (T.F.H.) and the same publishing house also brought out the sumptuously-illustrated *WATER GARDENS FOR PLANTS AND FISH* by Charles B. Thomas. *AN INTERPET GUIDE TO FANCY GOLDFISHES* by Dr Chris Andrews (*Salamander*) made full use of some excellent photographs to complement the authoritative text on the care and breeding of these ever-popular ornamental fishes.

A very handy volume from 'Down Under' is *AUSTRALIAN NATIVE FISHES FOR AQUARIUMS* by Ray Leggett and John R. Merrick (*J. R. Merrick Publications*) which not only reveals some of the dazzling fishes from Oz and gives excellent practical tips on keeping these fish in particular, but also provides very sound advice on fish-house design and management in general too.

A last-minute contender for inclusion in Christmas books must be the soon-to-be-published *MANUAL OF FISH HEALTH* by Drs N. Carrington and C. Andrews (*Salamander Books*), a much-expanded work along the lines of Dr Carrington's earlier volume for

the same publisher. A full review will appear in the January issue of *A & P*.

Finally, lest we forget our humble beginnings (or perhaps our limited funds), a delightful book at a modest price has been brought to our notice, which would make an excellent 'starter' for the younger aquarist. *DISCOVERING FRESH-WATER FISHES* by Bernice Brewster (*Wayland Publishers Ltd - £5.50*) has the advantage of superb illustrations from Oxford Scientific Films, but the text is just as informative and never 'talks down' to the reader, longer words such as 'metamorphose' being included as a matter of course, important words such as this being printed in bold type. The chapters cover the physiology of fish, their surroundings, diet, reproduction and growth, how fish are bred for food or stock, their natural enemies and keeping fish as pets. A short Glossary and further reading list complete the book. If you know a youngster with 'fishy aspirations' then here's a good present for Christmas.

Dr Burgess's Atlas of Marine Aquarium Fishes.



OUT AND ABOUT

GOING NATIVE

By
Julius Pursaill

Native marine fishkeeping is finally gaining recognition within the hobby. Most new marine publications devote one chapter to the keeping of native marines, although one is often left with the impression that this is only as an afterthought. The attractions of native marine fishkeeping are varied, including the advantage of free livestock. Perhaps most important, there is the excitement and challenge of capturing one's own specimens from the wild. For the D.I.Y. enthusiast, there is the unusual opportunity, in this country at least, to design and construct cooling systems out of old beer coolers or fridges. In spite of all these attractions, I had yet to find a publication or exhibit not dominated by either marine or freshwater tropicals. That was, until I visited Anglesey Sea Zoo.

Sea Zoo is to be found near the town of Llanfairpwllgwyngyll, in Anglesey, just across the often stormy Menai Straits. It is the largest marine exhibit in Wales, boasting 20 native seascapes and enough captive seawater to fill over 3,000 domestic aquaria. Having cajoled and bullied wife, mother and child halfway across North Wales with promises of splendour, I arrived excited, but with some trepidation. I sincerely hoped this would not prove to be another wild goose chase — it was a long drive back home again!

The exhibits opened with "Under the Pier". Turbot, rays and dogfish swim lazily around the weathered piles of old Bangor Pier, as the visitor peers down from above. More conventional aquaria are next; no drab monotonous, but roseate displays of Dahlia, Beadlet and Plumose anemones, beautiful Cuckoo and Ballan Wrasse, starfish and spider crabs, rivalling the splendours of the tropical marine tank. Opposite, the "Touch Tank" encourages



Sea Zoo's fascinating "Under the Pier" exhibit.



One of Sea Zoo's several large Conger Eels.

examination at the closest of quarters. Hidden crabs can provide a surprise, but at least the lobsters have their pincers neatly clamped to protect unwary little fingers.

The presentation is always adequate and occasionally inspired. Suddenly we found ourselves apparently underwater, bathed in dappled light, surrounded by six foot Conger Eels snaking in and out of the wreck. Lurking deep in the shadows of this 12,000 gallon double exhibit, are the twenty year old Sea Bass, or "Loup de Mer", Grey Gurnard and Whiting.

All the sealife is locally obtained, much from the fierce currents of the Menai Straits. This harsh environment is simulated by the "Swirling Swellies" — a display dominated by mussels, anemones and other filter feeders. The life of a tidal rockpool is also on show, with water pouring in and out in perfect time with the tides. Gobies and Wrasse

compete with Butterfish and Scorpions among shrimps, crabs and starfish, in the different levels of the tank.

Many of the exhibits are educational — fish farming is a recurrent theme. Bubbling green algae cultures supply food for the newly-fertilised oysters. Inch-long Blue Lobsters moult and devour their exoskeletons. These take five years to reach an edible size and are consequently not commercially viable, but thousands have been released into the wild.

Commercially successful fish farming is also in evidence here, not only in the trout hatchery, but also in the unusual exhibit of a community of leeches. These are batted down more carefully than octopus — a tiny airhole is their only connection with the outside world. Fortunately, they need feeding only once a year (on blood, of course) and arrived fed. I was unable to find anyone who was accepting responsibility for feeding them! Else-

where, they are used to supply anti-coagulants on a highly successful basis. Sadly, all these commercial successes remain freshwater, not marine.

At Sea Zoo, seawater is available on an unlimited basis, pumped direct from the nearby Straits. Supplies are replaced at the rate of about 30% per month, depending on the inhabitants of the display. The curator, Adrian Brook, has kept individual Sea Bass for over 10 years, before releasing them back into the wild. Pipefish, on the other hand, hardly surprisingly, do less well on the basic diet of squid cocktail. Plans to open an on-site Brine Shrimp hatchery should improve the situation.

Filtration is simple, basically because of the plentiful supply of fresh seawater. This is filtered by an air-powered undergravel system in all but the larger tanks, where pumps assist the flow. The only concession to the "high-tech" methods familiar to the tropical marine aquarist is the ultra-violet filtration used on the oyster tanks. This is essential in reducing bacterial levels to those required by the Ministry Inspector.

There are no complex heat exchange systems to avoid overheating in the long hot Welsh summer... the walls are, in any case, very thick, and equalisation of day and night-time temperatures has so far avoided any problems. The general health of the inhabitants would do credit to most tropical marine retailers.

The premises actually began life as an oyster farm, and much of the original equipment is still in evidence — notably the culture vessels in the algae exhibit. Sadly, this venture was not successful and the premises were then purchased by the current owners, David and Alison Lea Wilson and Mark Vollers. Their initial aim was to supply local retailers and hotels with fresh fish and seafood, but once again, commercial viability was elusive. It was finally as a tourist attraction

GOING NATIVE

that success was achieved — 125,000 visitors last year alone, and a British Tourist Authority Come to Britain Award!

Sea Zoo represents a rare opportunity for the aquarist to indulge his or her obsession, without alienating the rest of the family. Children are well catered for, with various games, high chairs and educational packs. Pushchair and wheelchair access is provided. The day can be rounded off with a visit to the bookshop, the restaurant, and the excellent seafood shop "Sea Catch and Carry", which fully deserves its mention in the "Which?" Good Food Guide. My only reservation was over the absence of encouragement for the aquarist. I did not expect to find equipment available — most holidaymakers' cars, filled to the brim with camping equipment and kids, cannot find space for bulky tanks or filtration equipment. The bookshop, I felt, could, however, have offered a selection of fishkeeping items without difficulty. Indeed, the entire published material concerning native marines could have been included without a reorganisation of their shelves! I understand this may shortly be rectified.

The marine enthusiast will, however, certainly not leave disappointed. Exhibits are constantly changing, reflecting the nature of the local catch. Highlights and surprises for me were an impressive pair of Triggers (summer visitors only) and a number of healthy-looking specimens of the Lesser Octopus. Sea Zoo can congratulate itself on furthering the growing interest in native marines and puts Llanfairpwllgwyngyll firmly on the map, not just because of the length of its name (try asking for directions!).

I returned home with a happy crew — I may even be allowed to go again...

Further details from: Anglesey Sea Zoo, Brynisiencyn, Anglesey, Gwynedd. Tel: 024 873 411.

Sea Zoo is open from 9.30am to 5.30pm until August and from 10.00am to 5.00pm until November. It re-opens on the 12 February 1989.

Admission costs for 1988 are as follows: Adults £1.95; Children 95p; OAP's £1.50; Group rates — over 12 people.

FEATHERS AND FINS

By
Dick Mills



UNDERWATER WORLD

How often have you been to a particularly well-laid-out, highly organised and immaculately-presented aquatic centre and come away thinking that really to complete the visit, a trip 'behind the scenes' was all that was missing? Obviously, the thought had occurred to those in charge of **Underwater World** (the aquarium counterpart at BIRDWORLD) near Farnham in Surrey, for they arranged a 'Fish Day' a short time ago for visitors, especially devoted to all things fishy.

I intended to be among the many and to take up, for me, the double opportunity as I had yet to visit the premises for the first time. Having spotted the event from an advertisement, I hadn't really understood the procedure for the day's timetable and presumed that whenever a group of ten or so people congregated at the entrance, a tour would commence. In actual fact, things were much more organised than that, as prospective 'tourists' had had previous opportunity to book in advance. However, I was able (through the kindness of **David Harvey**, the official guide and Curator of the aquarium) to latch on to a party that just happened to be setting off as I arrived.

The aquarium building is sited alongside the main entrance to BIRDWORLD and houses a souvenir shop and a bookshop in addition to the aquarium exhibits themselves. The aquarium display is set in a horseshoe shape: the visitors walk around the outside while all the technical supportive equipment is contained within.

It would be pointless to pick

out individual exhibits which appealed to me, for each aquarist will have his or her own preferences. However, all visitors were unanimous in their appreciation of the spotlessly clean tanks with their very healthy inmates.

Mention must be made of the excellent plant growth and numbers of young fry much in evidence. Of course, the youngsters in our group were keen to get on to the Sharks, an exhibit made all the more intriguing by the fact that, not only had they been bred in Underwater World, but there were their offspring quietly hatching in their egg cases in a nearby tank!

During the 'behind the scenes' walkabout, everything again

Baby sand shark — hatched out at Underwater World.



UNDERWATER WORLD

pointed to absolute cleanliness and optimum life-supporting conditions. Young fish were seen in the settling tanks of the comprehensive flow-through freshwater filter system, while invertebrate life (probably sponges) could be seen clinging to the interior of external pipe-work of marine filters. All the while, David was keeping up a running commentary, answering questions and telling marine fish species that popped their heads above the water that feeding was later (the Lionfish, *Pterois* species, practically climbed out of their tank to greet us!). One ingenious exhibit provided a beach environment for Mudskippers, complete with tidal flow, although David did admit to one surprising fact: the water in the tank was fresh, not salty. By now, I realised why the tours had been pre-planned — nearly an hour had gone by — hardly a good basis for ad hoc tours!

Once outside in cooler environs, a lot more time was spent in the fabulous bookshop. Only very recently opened, it is the owner's proud boast that it is the best animal bookshop to be found. Faced with the mass of high quality books on all forms of wildlife (including aquarium fishes, of course) it would be difficult to disagree.

Following this first successful 'Fish Day', I am optimistic that others will follow (already plans are in hand for next July), although once the word gets around they will need some pretty tight scheduling. I'm sure that David and his more than competent team will cope splendidly, and continue to infect visitors with their sheer enthusiasm for the job. By the way, if on your visit to Underwater World there's a waiting list to look round, you can easily kill more time looking at the equally fascinating BIRDWORLD next door — but that's another story!

Open every day, UNDERWATER WORLD is situated on the main A325 road between Farnham, Surrey and Petersfield, Hampshire. For further information (there's an informative newsletter too) contact **David Harvey** at Underwater World, Holt Pound, Farnham, Surrey. (Tel: 0420 22140).



Top left, an appropriate aquarium layout for a catfish-biased aquarium should include shelters for the fish to hide in as and when it suits them. Above, *Rineloricaria* — ideal as a peaceful oddity for the catfish community. Top right, the Indian Butterfly Catfish (*Eretmodus pussilus*) — reproduced here for the first time in a British magazine — is a peaceful rarity which has been occasionally imported over the last three years. Right middle, *Corydoras panda* is a rare, but highly desirable, and hardy community species. Above right, *Corydoras* are ideal bottom-living tankmates for most community aquaria.

CATERING FOR CATS

Author of several cichlid, catfish and children's adventure books, David Sands, lays down the ground rules for starting up and stocking a catfish-biased community aquarium (Photographs by the author).

I do not believe that a community aquarium should contain catfish and no other fish, but there is an easy explanation for this article . . . it is certainly reasonable to establish a good community where the stocking level bias can be directed towards substrate dwellers.

If you have a two- to three-foot aquarium (even four-foot tanks and upwards — the larger the better providing you have ample filtration, etc) that you wish to establish with a catfish bias, then certain criteria come into play.

The substrate, filters and heating

Firstly, it is important that the substrate



is not harbouring excess bacteria or stagnating debris because this is the area most catfish inhabit. If undergravel filters are employed then it is a simple task to use a gravel siphon once a week and draw away organic waste that would otherwise stagnate over a period of time. Regular use of these basic, yet marvellous, aquarium maintenance devices ensures that catfish do not contract bacterial infections which reveal themselves through Fin Rot, etc. It is a paradox that fishkeepers consider catfishes tough, even

indestructible sometimes and yet, once they are infected, they can be so difficult to treat.

The signs of stagnation and depleted oxygen levels at the lower aquarium levels can be clearly seen once it is known what to look for. If catfishes (especially *Corydoras* and smaller Loricariids such as *Ancistrus* and *Peckoltia*) are darting up to the water surface every now and then and the frequency increases, then stagnation is almost certainly the cause. Another sign is that bottom dwellers rise off the substrate and hover in the upper levels.

To correct this situation involves little work; simply a gravel siphon set and, perhaps, a closer look at the air pump output . . .

If internal or external power filters are

employed and not undergravel (the ideal is both power and undergravel filtration) then it is doubly important that the substrate be raked and siphoned on a strict and regular basis. I would argue that if undergravel filters are not used in the aquarium it is important that the substrate be as shallow as can be so untraced food and organic wastes cannot build up to create a deadly bacterial zone.

To summarise: if lightly spread substrate is used, almost any filtration method can be successful with catfishes. Stocking levels should be restricted if a box, sponge or small internal filter is used, but all these methods are acceptable if the substrate is kept shallow. In contrast, an efficient undergravel filter requires a good gravel depth and I recommend that the *Kahs* in (0.5cm) rounded gravel be used at between two to four inches deep (5-10cm).

Catfish may be able to endure lower temperatures, but it is a myth to say that they thrive under cool conditions. For good growth and all-round health, most catfishes enjoy a range between 77 to 85°F (25-29°C). When a spawning trigger is necessary, a ten degree (Fahrenheit) lower temperature range can be maintained for a short (week or so) period.

Lighting and aquarium plants

Catfish are, for the most part, nocturnal animals. Aquarium lighting in the catfish community is required only for viewing or keeping live plants 'in the green.'

There are a few plants that can survive the robust attentions of bustling catfish and slightly subdued lighting: Java Fern and Java Moss, Amazon Swords and the tough and, therefore, ideal Indian Fern floating plant. All aquatic plants thrive in and prefer well-lit conditions, but the ones I have named seem to adapt to an inferior lighting that a 'catfish biased' aquarium demands.

That catfish enjoy shade and shadows is not unusual in the fish world, as most fishes are wary of open waters. It is, however, perhaps more accurate to write that catfishes are more light-shy and secretive in nature and in aquaria.

There are superb facsimile plants on the market. When they are grouped together in different heights they can almost be as stunning as a live plant display. They do not need good light or feeding and catfish cannot really damage them.

I prefer live plants with a combination of these life-like artificial plants (the latter are perfect to fill a very dark corner in the aquarium). Live plants do not only beautify aquaria, but they also aid the bacterial and pH balance of the system (plants can affect the pH by removing carbon dioxide during the day, with the lower levels that result producing a higher, alkaline pH). One interesting point which came up in a discussion with Dr Neville Carrington of Interpet several InterZoo exhibitions ago, is that artificial plants provide a good surface for nitrifying bacteria and therefore help biological filtration (breakdown of fish wastes). To summarise: catfish do not need light, but live plants do.



Chaca chaca is a large-mouthed predatory catfish which can only be kept in a community consisting of relatively big fish.

Aquascape and general aquarium layout

Catfishes need to have places to hide, much to the displeasure of many an 'out of pocket' fishkeeper who wants to see a new and expensive purchase. The catchword to this problem is called compromise, since catfish like darkness and nooks and crannies, while fishkeepers like to see catfish 'out and about' in the aquarium.

One way to encourage a catfish to be less light-shy than its instincts say it should be, is to provide it with a pseudo-natural aquascape to which it can relate. The more alternative nooks and crannies and light and shade for it to choose from, the more likely it is to feel adventurous about wandering around. The less of an arena your aquarium layout is, the more chance there is that the catfish will feel secure enough to wander about. (*The application of fish psychology for fishkeepers, Part One, by David Sunda, as yet unpublished!*)

The simple way is to provide plenty of caves, bogwood groups and twig pieces, and almost connect them together. Catfish are not unlike their feline namesakes in that aquatic pussy cats hug the substrate debris for protection, just as an alley cat keeps to walls and hedges. If you place wood or stone debris in lines from cave to cave (cave = a half-broken plant pot on its side or a piece of bogwood riddled with holes) then catfishes will use these corridors to travel from area to area. Bits of aquatic debris serve as territorial markers and they can encourage movement and display, although heated arguments between Loricariids (Sucker-mouth Catfishes) might not suit some fishkeepers who prefer a quiet aquarium.

Rocks should be water-worn, nicely rounded and smooth, and as hard as granite, etc. A nice clump of largish pebbles can look superb. Once the Java Moss has grown on the wood and rocks, it will look just like home to the average catfish.

Stocking the catfish aquarium

Small catfish can be accommodated in small to large aquaria, but potentially large

catfish should really only be kept in large aquaria. It is quite wrong to keep predatory catfish such as the Tiger Shovelnose, *Pseudoplatystoma fasciatum* in three- or four-foot aquaria when they deserve at least double that amount of water volume space.

Most fishkeepers want to keep small to medium catfishes such as *Corydoras* and *Ancistrus* and, perhaps, their larger cousins. *Corydoras* are those well-known small, whiskery catfishes that are so very popular. It is plainly obvious that fishkeepers find them interesting from the names they have given to the different species. The Bandit Catfish from Colombia, the Skunk Catfish from Peru, the Bearded Catfish from Brazil and the widespread Elegant Catfish, are all common names for various *Corydoras* kept in the aquarium. They probably represent the total image of catfish to most fishkeepers, despite the fact that the massive (in terms of distribution and number of species) worldwide catfish group contains a legion of different shapes and sizes.

There is a steady and growing interest in *Corydoras* and this is easily explained. These droll, peaceful, yet robust catfishes, collected by South American fish exporters or farmed by commercial fish breeders, are widely available in pet shops. They have never been a tropical fish 'simply of encyclopaedia or reference book,' and each year reveals a new species that has previously remained undiscovered by explorers.

The Peppercorn Catfish was the first to have been imported for aquaria in 1893 when, it must be said, fishkeeping interested only a handful of people. Today, it is a very rare freshwater aquarium that does not contain a *Corydoras*. The available selection in 1988 (almost a hundred years later) is quite extensive, with almost 130 species established by current scientists.

Once established in aquaria *Corydoras* cats swim across the gravel searching for titbits in the substrate as they would on their creek or river bed in Nature. They feed on small crustaceans and aquatic invertebrates, ranging from shrimp and insect larvae to *Tubifex* worms and *Daphnia*. This diet is easily mirrored with the complete range of frozen and freeze-dried foods available in the hobby today.

Two well-known species, the Bronze Catfish, *Corydoras aeneus*, and the Peppercorn Catfish, *Corydoras paleatus*, are farm-raised in great quantities and are available in most aquatic pet shops. They are sold in thousands across the world and are often the aquarist's introduction to the absorbing world of catfishes.

Corydoras are undoubtedly the characters of the aquarium: they roll their eyes in a winking fashion as they clean them of irritation, and are even able to breathe air from the water surface (as can *Ancistrus* and many other catfish) when normal gill respiration does not offer enough oxygen. As mentioned earlier in this article, if they make the trip up to the water surface too often, this indicates low oxygen (sometimes extreme acidic water) conditions.

Many *Corydoras* have proved easy to spawn and the fry of almost thirty species have been raised by British enthusiasts. Be-

cause they are mature at two or three inches (5-7.6cm) long they can be bred in handy-sized, five and ten gallon aquariums (22.5-45 litres).

There are few fry to rival "kittens" and breeders have little trouble passing on the ten to several hundred youngsters that can be raised from a single spawning.

Corydoras are successful in nature in that they have a widespread distribution across South America, from the mountain waters of the Peruvian Andes to the tidal rivers in Argentina. Every year approximately 500,000 *Corydoras* are exported by aircraft, in sealed plastic bags containing a minimum amount of water but ample oxygen. The bags are packed tightly into polystyrene boxes no larger than small apple cartons. Consignments of 10 to 200 boxes (usually 2 to 50 will contain *Corydoras*) are flown to Europe and America almost every week for the aquarium trade.

By simple calculation, that is almost 1,400 fish every day. Therefore, even if you do not set up a catfish-biased aquarium, there is no excuse why your community aquarium should not include at least a trio of winking, rooting, busy little scavengers...

Most, if not all, *Corydoras* species mix together and they, in turn, mix very well with their own cousins, *Brochis*, *Dianema*, *Hoplosternum* and *Callichthys*, etc. and most other catfishes, providing they are not large predators (many a *Corydoras* has been swallowed by an overgrown *Pimelodus*). It is very difficult to give exact stocking levels for catfish (as I found out when I was



Corydoras aeneus (the Bronze Catfish) — the best-known catfish species.

writing the Salamander/Interpet/Tetra Guide to South American Catfishes) and, really, commonsense should prevail.

In a three-foot aquarium which includes a reasonable number of other community fishes, the substrate should be home to six to eight *Corydoras*, a couple of *Ancistrus*, the odd unusual catfish such as *Ferlowella* (the Twig Catfish — once a rarity and now spawned in aquaria), *Prekottia* (small Sucker-mouth Catfishes), *Bucocephalus* (the Banjo Catfish) and some of the Talking Catfishes *Amblydoras*, *Platydoras* and *Acanthodoras*.

If the intention is to grow-on a group of *Corydoras* for breeding, then the number of other catfishes kept alongside them should be kept to just a few. This would keep down the competition for space and food. If the aquarium is overstocked, then the growth rate can be severely reduced and the health

stability of the fishes put to the test. If you are keeping catfish for enjoyment and not breeding, then it is not so important how and what you mix them with.

Many fishkeepers like to keep a broad mixture of catfishes together and may draw on the available African, Asian and South American species. To know "what mixes with what" is more or less commonsense again. Catfishes with a broad, open, front-facing mouth and reaching barbels (*Pimelodids* from South America and *Mysticids* from Asia) are predatory and can be kept with larger community fishes such as large Tetras, Barbs, Sharks, Loaches and Gouramis but cannot be trusted with smaller community fishes such as Neons. These larger free-swimming catfishes need plenty of aquarium length and are best suited to four/five-foot tanks. Of course, it's silly to consider buying a catfish that is only two inches long (5cm) if it ends up growing to four feet (120cm) in length. Try and read up on the fish before you buy and save on a great deal of trauma...

By contrast, if the catfish's mouth is small and placed down or terminally on the head (or even under the head) then it is certainly fine for the community aquarium. There have been some wonderful Indian catfishes on the English market for quite some time (contrary to certain reports), and some of these make great oddities for the community aquarium with a difference.

Whatever you keep in your catfish aquarium... look after them to the best of your ability and, most of all, enjoy your hobby...

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Seaview

by Gordon Kay

It's the season for buying presents, so I thought it might be good to help a little by suggesting a few things from which to choose so as to make the marine aquarist in your life happy this Christmas. If you are the marine aquarist, just delicately place this under your partner's nose!

My favourite books for Christmas

Top of any such list just has to be a book and some of my personal favourites are:

The Practical Encyclopedia of the Marine Aquarium, by Dick Mills (Salamander, ISBN 0 86101 306 9). I reviewed this book on this page in August so you will remember how impressed with it I am. Lots of interest to any marine aquarist, including some terrific photographs.

Keeping Marine Fish, by Graham Lundgaard (Blandford Press, ISBN 0 7137 1507 3 — Hardback and ISBN 0 7137 1694 0 — Paperback). A much cheaper book this, available in both hardback and paperback. You should be able to get the paperback for under £5. This is a smashing book which admirably bridges the gap between the "Mickey Mouse" books and the heavy, more scientific tomes. Of more interest to a newcomer, although more advanced hobbyists would welcome being able to refer to it from time to time. A great stocking filler.

The Readers Digest Book of The Great Barrier Reef (Readers Digest, ISBN 0 94981 9 41 7). I could fill a whole page with eulogies on this book, which probably falls into the "coffee table" category — a term which I hate. It was not, of course, aimed at the aquarist, but no-one with an interest in marine life could fail to be enthralled by its totally absorbing text and incredible photographs. I received this book as a present and it has given me hours of pleasure ever since.

A Natural History of the Coral Reef, by Charles R. C. Sheppard (Blandford Press, ISBN 0 7137 1268 6). Another "coffee table" book which was not aimed at the aquarist, yet one which any fishkeeper who is interested beyond his/her tank would find worth having.

One of my long-standing ambitions is to own a pair of these magnificent fish. We can all dream, can't we?



Good text, but the photographs — many of which are black and white — are a little disappointing. A nice prezzie, nonetheless.

Butterfly and Angelfishes of the World Vol I, by Roger C. Steene (Mergus, ISBN 3 88244 000 7). *Vol II* by Dr Gerald R. Allen (Mergus no number — now distributed by Aquarium Systems). Given the subject of these volumes I could be accused of being biased, but who could deny that they are truly wonderful books. Volume I covers species of Australia and New Guinea, with the rest of the world being dealt with in Volume II. Each species is shown in superb colour pictures (aquarium and underwater shots) and the text contains information, both on its natural

history and aquarium suitability. Volume II also contains chapters on hybridisation, aquarium care, hints on feeding and even photography. It would be a great shame if either volume were bought on its own for they scream out to be read together. I don't really know, but they are likely to set you back well over £40. Having said that, what a present!

Other possibles

The above are just a few of the books which are available and there are many more if (s)he already has them. Apart from books, there are loads of other gifts that would be well received; How about a year's membership of the British Mar-

ine Aquarist Association? As Chairman, I do have a vested interest — I admit — but BMAA membership really is worthwhile. The annual subscription is £9 (£15 overseas) and, for that, the recipient would get the journal — *Marine News* — every two months, the chance to buy books and other items (s)he would not normally be able to get, to attend some of the enjoyable events we promote and, probably most importantly, contact with other marine aquarists all over the world. For details please write to: Alan Hale, 9 Leacroft Grove, Hill Top, West Bromwich, West Midlands.

Or how about a year's subscription to this magazine? Details of this can be found elsewhere in this issue. Or what about a water analysis kit? The major manufacturers of test kits all produce boxed sets of their test kits which would make very useful and acceptable gifts. Battery-operated digital pH meters have also just come onto the market should you wish to buy him or her a more high-tech prezzie.

There are hundreds of other things which would make very welcome gifts, including salt mixes in bulk packs, power filters, protein skimmers, automatic feeders, time switches and, even, gift vouchers from some dealers to give your favourite person the choice. The possibilities are endless. One thing is certain, however, and that is that a "fishy" present is always a winner.

My Christmas list? Well, that would include:

- (1) A spawning from my beloved Bicolour Angels.
- (2) A pair of *Chaetodon semilarvatus*. (Fat chance... Ed!)
- (3) A species of *Caulerpa* which will grow quicker than my fish can eat it! (Mine does... so there! Ed)
- (4) A Tunze osmolator.
- (5) A dive on the Great Barrier Reef.
- (6) A letter from somebody out there!!

I've really enjoyed writing this page through the year and I hope that you have enjoyed reading it. I'll be with you again in '89. Meanwhile, I wish you all a very happy Christmas and a peaceful New Year.

COMPETITION WINNER

T.F.H. COMPETITION WINNER FINALLY NETTED

Philip Law, winner of the top prize in our highly successful T.F.H. competition (August '88), spends much of his time working away from home and is, consequently, a difficult man to pin down. However, pinned down he was... eventually! And very pleased he was about it, too.

Philip — seen holding a copy of *Dr Burgess' Atlas of Marine Aquarium Fishes* — (part of his prize) was presented with his gift by Janet Hardy of T.F.H. Publications at Swallow Aquatics of Rayleigh, Essex.

Based in a two-acre site, Swallow Aquatics has a 12,000 square foot covered sales area housing tropical freshwater, marine and coldwater fish in over 250 tanks and 50 ponds, along with a 5,000 square foot plant display area and a comprehensive range of dry goods.

Also in shot, and sharing in the presentation, are Swallow's Stephen Clifford, Tracey Hopton and Julie Clifford.

