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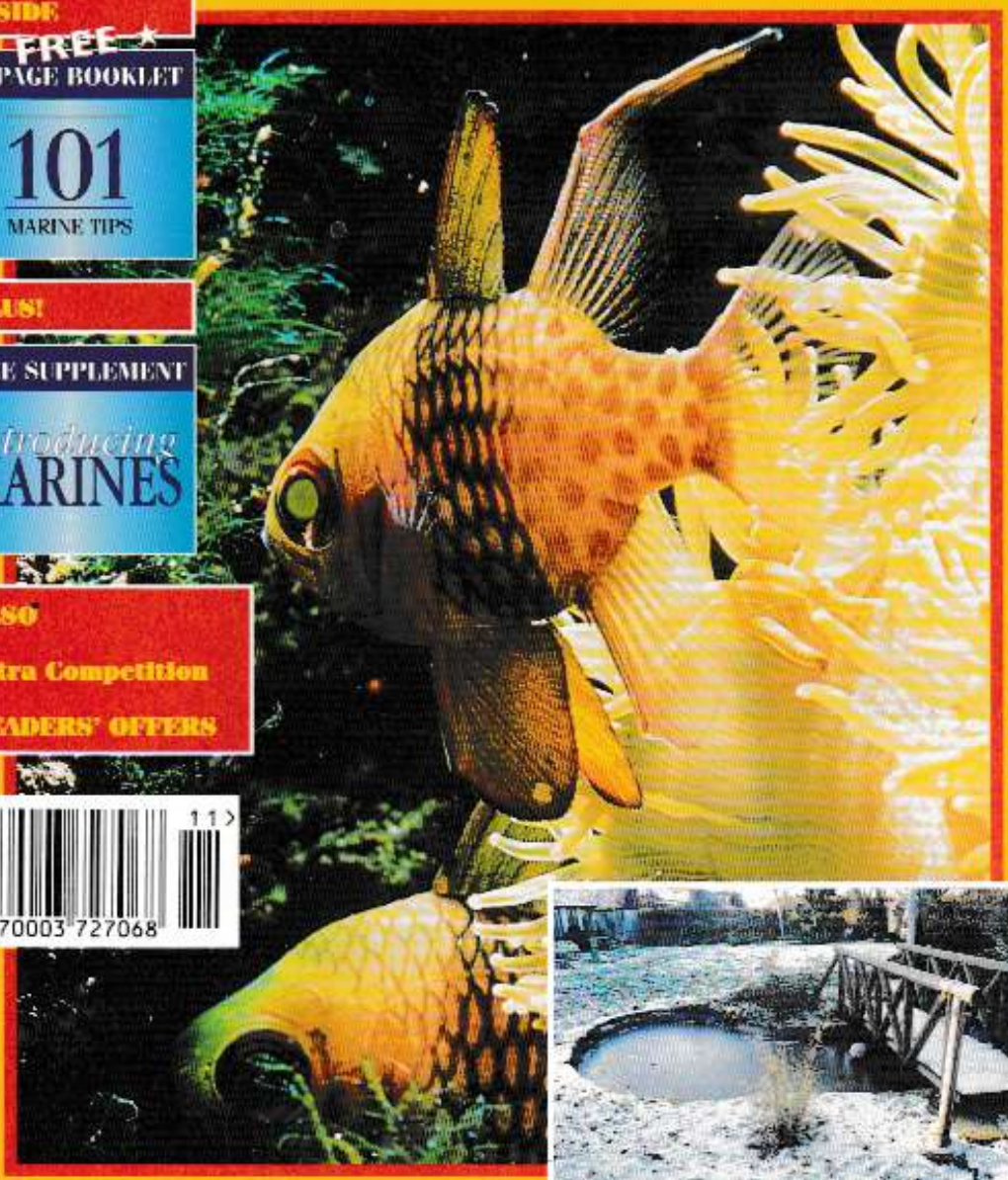

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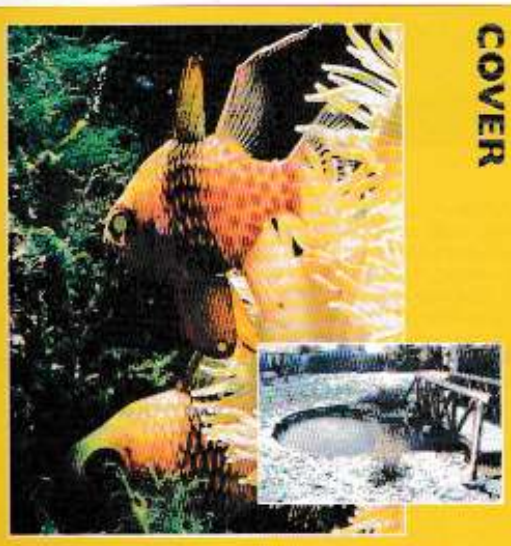

MAIN PHOTOGRAPH At first glance the Pygmy Cardinalfish (Sphaeramia nematoptera), seems to be made up of various bits and pieces from other species. In some ways this colourful fish from the Western Pacific sums up the complete marine fishkeeping scene — plenty of colour, many different shapes and well worth looking at! In fact, just like our marine-orientated issue this month.

PHOTO: M. P. & C. PIEDAGOR

INSET PHOTOGRAPH We cannot ignore it, winter is on the way. But there's much you can do to alleviate poor conditions in the pond as will be seen within these pages.

INSET PHOTO: GORDON WIGENS

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COMMENT

I am especially pleased to welcome you to this issue of A&P for it represents an emergence to better things all round for the aquarist.

Following the unfortunate disruption in our publishing schedules earlier this year we are now settled back on track, and have been since May. But what has that got to do with this particular issue you may well be asking. If you are a subscriber you may have been woken up by the crash as it fell through your letterbox, due to its increased weight this month. If you're amongst those who find difficulty in finding A&P on the shelves of your local High Street bookseller then this month should end all that — every branch of W. H. Smith will be featuring A&P on its 'Just Out' feature shelf which is a great thing for readers (and our advertisers!) alike. So, if you don't see it, there's only one possible explanation — they've sold out!

Seriously, though, should you not be able to find A&P do let us know and we'll take it up with our distributors.

In order to provide the best in the magazine for this occasion you will find that in addition to the usual all-embracing aquatic content , including a bumper look at new products at this year's GLEE exhibition at the NEC, there is a Marine Supplement plus a 32 page Booklet full of FAQs (Frequently Asked Questions) concerning marines which has been put together by Nick Dakin.

A&P is also a familiar attendee at all of the major aquatic weekend Festivals (including some garden shows, too) throughout the year, whether they be indoors or out where you can catch up on your back numbers or those Supplements you might have missed — we support the hobby for the benefit of both private fishkeeper and those already in the ranks of the well-organised aquatic societies.

Nick Dakin

EDITOR

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Sonia Guinane recalls her personal observations of *Paretroplus kieneri*, a highly endangered Cichlid species from Madagascar

PHOTOGRAPHS BY THE AUTHOR

Living with

'Ken', aka *Paretroplus kieneri*.

From the very limited information about Cichlids from Madagascar the *Paretroplus* genus is the largest, with *kieneri* being the smallest species.

There are seven species of fish in the *Paretroplus* genus, four of which are on the highly-endangered list and includes *Paretroplus kieneri*. I was lucky enough to obtain a single specimen of this fish during a recent visit to Holland and Germany last November and bring 'him' safely back to Sussex.

I travelled over to Europe with my good friend Graham Ash, who has been there before and had often said in conversation that the selection of fish available, especially cichlids, was excellent.

When the trip was suggested I was only too delighted to have the opportunity to go. Unfortunately, the aquatic dealer in Holland only had the one *kieneri* available, but being the eternal optimist, I am very hopeful that I will encounter more of these fish in the not too distant future.

DESTRUCTION OF NATURAL HABITAT

From the very limited information that is written about Cichlids from Madagascar I have discovered that the *Paretroplus* genus is the largest, with *kieneri* being the smallest species, reaching a TL of 5in or 13cm, if you happen to be metric. In body shape they are very similar to the *Etroplus* species that occur in the Indian subcontinent and are obviously closely related. The species that are still remaining are to be found in the north of Madagascar, in both fresh and brackish water lakes and to a lesser degree rivers. With the destruction of the natural habitat in the country apparently some of them are near to extinction, which was the main reason why I have taken such an interest in Madagascan Cichlids. My single *Paretroplus kieneri* was housed on his own in a small tank at the Dutch aquatic dealer (Holland Cichlids), next-door to a much larger tank, full of *Paratilapia polleni*, which is another endangered cichlid from Madagascar. I already own a breeding pair of this most attractive small predatory species, so it was a pleasure to see so many available for sale. Hopefully, this is an example of how the ordinary aquarist can help conserve rare fish in the hobby, even if the fish in its natural environment is severely threatened.

The *kieneri* caught my eye immediately, not because he was particularly brightly coloured, but just for the sheer reason of being another species of Madagascan fish that I had never encountered before. There was not a price shown on the tank, but I was determined that I was going to buy the fish, regardless of price.

A BARGAIN

I asked the proprietor whether the fish in question was for sale and, if so, what was the asking price. He seemed a little reluctant to impart this information but I soon learned that he could be mine if I was willing to part with 120 Guilders, which, indeed, I was. I handed over £40

Ken

sterling as this delightful place was more than happy to take several European currencies, as well as Dutch. This could well become common practice if the ECU takes off in the future. I think that Bert was rather bemused that this strange English woman was willing to pay that amount for a single fish, but when I also learnt from him that the fish had originally cost him more than 100 US Dollars I was certain that I had a bargain.

The fish was carefully bagged in preparation for his journey back to the UK as Graham and I were booked on the afternoon ferry from Ostend so had quite a long journey ahead of us. On the journey home I was trying to decide, where would be the best place to house the fish when I eventually got him back.

The obvious place was our 6x2x2ft tank which already contained three *Parratilapia pollens*, three *Paratheraps fenestratum*, six juvenile *Amphilophus labiatus* and three juvenile *Nandopsis labridens*. All these fish are fairly aggressive when adult, but as they were still juveniles I was hopeful that the *kieneri* would be able to cope, especially as I was also adding three *Amphilophus nourissati* at the same time. If necessary we have a couple of small tanks where bullied fish or fry can be housed if and when there is a problem in any of the larger tanks.

NOTHING WRITTEN

I know from experience that while I may think that certain fish will be compatible with others the fish themselves often have different ideas. It is a great pity that cichlids themselves do not read the books written about them!

When I reached home Dave was delighted with the fish that I had brought back, especially the Madagascan who we decided to christen Ken (I know for a fact that I am not the only fish-keeper to give their fish names!) whom we agreed to house with the *nourissati* in the largest of our tanks with the tank mates already mentioned. If Ken had a problem coping with the Central Americans and other Madagascans I decided that he may fit in better with some of my South Americans. As I knew nothing of the temperament of these fish this was virgin territory to me as to how these fish behave in the aquarium. There was absolutely nothing written about this in any of the fish books that I own.

Ken is about 5in TL and is very deep bodied, similar to a Severum in shape. I have learnt that juvenile *Parratilapia* species shoal in the wild, usually about five or six in number.

This *Parratilapia pollens* male dares anything to invade his territory (or even tank, in 'Ken's' case!)

They have a tendency to sift in a similar fashion to the *Geophagus* earth-eaters from South America. Ken certainly does this quite often, but not so frequently as the *Satanoperca jurapari* and *pappaterra* that I also own. I think that it is possible that they are the Madagascan equivalent of earth eaters in that country. His colouration is a basic orange colour, with grey smudges, which lighten or darken with mood. This reminded Dave of the orange-blotch (Marmalade Cat) species of *Pseudotropheus zebra* found in Lake Malawi.

At first Ken seemed to be faring well in the 6ft tank, apart from the odd split fin or tail which always occurs when adding new cichlids to an established community. The first night home I offered Ken and the other residents of the tank frozen Bloodworm, which is always popular, and I was delighted to see that Ken was tucking in with the rest of the fish, including the *nourissati*. None of them seemed to be harassing the new arrivals too much so I was hopeful that everything would be OK. The next morning everything in the tank was still status quo, so I remained fairly confident .

LOST CONFIDENCE

At feeding time that Saturday Bloodworm was offered yet again and all the fish including the new arrivals were feeding. I spent that evening in the fish room with Dave (unfortunately, we do not yet have a fish house), as I wanted to watch the behaviour of my new Madagascan with a view to writing about him, as I have already written articles about the other Madagascan species, *Paratilapia polleni* and *Paratilapia bleekeri*, that I have kept.

For the next few days I continued to watch the tank at every available opportunity and soon became aware that the *kieneri* seemed to be losing his confidence. He was very wary of the male *polleni*, who persistently chased him, if he strayed into his area by mistake. He was beginning to show a lot of damage on his fins and tail (which was caused mainly by three juvenile *Parotherops fenestratum* and the male *polleni*) and seemed to be reluctant to eat, only eating frozen Bloodworm or earthworms when he did so. I was rather concerned that he would not even try any of the dry food that was offered and readily eaten by the other tank inhabitants. I was so worried by the fact that he was not eating that I phoned Bert at Holland Cichlids to ask what he had been fed there.

The answer was a type of dry food of which I had never heard and was unable to obtain in this country. The only solution was to continue to offer Bloodworm, Mysis Shrimp and live River Shrimp. Earthworms had to be put on hold as mid November was not an ideal time to be digging in the garden!

FEEDING PROBLEMS

It was becoming apparent that the fish would have to be moved as he was just not coping and I did not want to lose him. Dave transferred him to a 4ft tank which contained pairs of *Satanoperca pappaterra* and *Satanoperca jurapari*, with some *Anomalochromis thomasi* as dither fish. All these species are extremely peaceful so I hoped that the Keni would be more compatible with these fish than he had been in the other tank. As time went on he seemed a lot happier and his damaged fin and tail repaired quickly. Feeding continued to be a problem, as he would still only accept frozen food. I tried holding Doromin at the surface of the water but he seemed to prefer my finger and I can confirm that he has very sharp teeth. He was offered scalded lettuce but that was received with the same contempt as the dry food, so I carried on with the Mysis and Bloodworm. He was developing quite an endearing personality similar to an Oscar and I am of the opinion that Madagascan Cichlids are highly intelligent.

'Ken' looking not so good after an altercation with conspecifics.

TROPICAL

THE MOST DIFFICULT TO PLACE

Living with Ken

For a while all was quiet in the tank but then history repeated itself, but this time the boot was on the other foot. On this occasion it was Ken that had become the bully and was taking great delight in chasing the *poppaterra* and *jurapari*, both of which are very peaceful fish. Yet again it was necessary to move this problem fish, who was definitely a Jekyll and Hyde in character. This time Ken was moved to an empty 3ft tank, with just a juvenile *Nandopsis tetracanthus* for company.

Dave and I were fast coming to the conclusion that he was one of the most difficult fish to place that we had encountered, but I did not give up hope completely. His feeding habits did not change either so I continued to feed the obligatory Bloodworm and Mysis shrimp.

Following the British Cichlid Association Auction in March of this year there was some space available in one of our 6ft tanks so I decided to try putting the Ken in with the trio of *Paratilapia polleni* and some juvenile Central Americans. He had been in the tank for about ten minutes when World War Three threatened yet again. He underwent an intense colour transformation as he came face to face with the male *polleni*, with his body turning a very light orange and his head was completely black, from his operculum forward. I have not seen this colouration on the fish on any other occasions, although he sometimes goes completely light orange, but most of the time he retains the 'Marmalade Cat' appearance. He attacked the male *polleni* and any other fish that made the mistake of getting in the way, so yet again he was back in solitary. His future was the subject of several conversations between Dave and I, but I could not bring myself to part with him. (Ken, not Dave!).

GREAT CHARACTER

I have the offer of a good home for him at the Bolton Museum Aquarium, where the curator, Tim Henshaw, has a magnificent display tank of Madagascan Cichlids, if he really does become a problem in the future.

I have tried, without success, to locate some more *Paretroplus kieneri* within Europe, but I have discovered that there are some of these fish available in Florida. I am now awaiting details of the cost involved for the transportation of fish from North America and I am sure that it will not be cheap.

At this moment in time Ken is living in a 5ft tank with the South American cichlids already mentioned and I am pleased to be able report that his behaviour is now impeccable towards his tank mates. He will now eat ALL food that is offered to him and is a pleasure to own as he is such a great character. I am optimistic about the future for this highly endangered Cichlid from Madagascar.

In conclusion, I would like to say that it is obvious that Cichlids from Madagascar should be given as much tank space as possible to be able to breed them successfully. It is good to hear that they are being bred in captivity, so perhaps they will continue to thrive in the hobby as more aquarists are beginning to take more of an interest in these endangered fish.

READER'S OFFER

Free Repair Kit Packs from DOW CORNING

Specialist sealant manufacturer Dow Corning Hansil has introduced new eye-catching, distinctive packaging for its market leading Aquaria silicone sealant, making product selection quick and easy.

Available from specialist wholesalers and pet shops Dow Corning Aquaria gives a permanently flexible, watertight rubber seal, making it ideal for constructing aquaria and fish tanks, repairing cracks and sealing connections. The sealant can also be used to apply fixtures inside or outside of the tank and for mounting valves. Providing excellent adhesion even under high pressure Dow Corning Aquaria can be applied to a wide range of materials including glass, perspex, acrylic, metals and many plastics.

Dow Corning Aquaria is completely safe to use in both fresh and salt water fish tanks and comes with the benefit of a 10 year guarantee. It is available in a clear finish and is supplied in a choice of 310ml cartridges, 78g blister carded packs and a 25g repair kit.

Most aquarists know that Dow Corning provides a convenient method of repairing and re-sealing aquariums, as well as having other uses around the fish-house. The handy 25g repair kit is ideal for these 'spot on' jobs and Dow Corning Hansil have generously offered to give away free Repair Kit Packs to the first 50 readers' names drawn from the hat.

All you have to do is write your name and address on a postcard, or sealed down envelope, and send it to: Dow Corning Offer (AP11), Spurgeon Walker Associates Ltd, 67 High Street, Sevenoaks, Kent TN13 1JY, to arrive no later than December 19, 1997.

Winners will receive their Repair Kits direct from Dow Corning Hansil.

For further information about Dow Corning Hansil products please contact: Dow Corning Hansil Ltd, 19 Wintersells Road, Byfleet, Surrey KT14 7LH. Tel: 01932 351911. Fax: 01932 340624.

Stephen J. Smith looks to keep out the cold from the pond

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In the Bleak Midwinter

PHOTO: GORDON WIGENS

The winter months — especially in the United Kingdom — are always unpredictable with regard to the weather. At this time last year the climate can range from reasonably mild, maybe with a light sprinkling of snow lasting just a day or two at the most, to bitterly cold: I have known the whole of February to be completely ice-bound, and temperatures dropping as low as minus 27 degrees Celsius!

So, it becomes necessary to protect your fish from the worst that any winter can throw at you and your fish. For some fishkeepers — especially the more enthusiastic Koi-keepers — this means going the whole hog and installing gas-fired central heating in the pond! The view is that the Koi are worth several thousands of pounds, and the 'relatively small' (sic) investment to keep the fish warm and cosy throughout the worst winter weather was well worth it!

> The unpredictable weather at this time of year makes it necessary to protect your fish from the worst that any winter can throw at them.

An alternative to the 'luxury living' afforded to those Koi is to float an immersion heater in your pond. Similarly, this can work out quite

In the Bleak Midwinter

expensive, but the use of a timer-switch to turn on the heater only during the coldest part of the night will help to make that winter electricity bill just slightly more bearable!

Of course, such (drastic?) measures should be accompanied with whatever means you can to insulate your pond: both around the sides and over the surface. When planning your pond see if you can 'pre-line' the walls with polystyrene blocks (these are used in the building industry to insulate houses) or, if you are installing a pre-formed fibreglass liner, the use of polystyrene 'beads' or so-called 'peanuts' can prove extremely effective in insulating your pond from the cold ground.

The surface area of a pond is where the majority of heat is going to emanate from — and it is imperative that your provide some form of cover for your pond over the winter months. Now ... don't do what one fishkeeping newcomer attempted, which was to buy a swimming pool cover to float on his pond. The result was to reduce the oxygen levels so drastically, by reducing the effective surface area of the water, that he lost several fish from oxygen deficiency.

The simplest form of pond cover is ultra-violet treated greenhouse polythene, stretched over wooden frames, which are then laid or lashed to the pond walls. (I would suggest that some means is employed to hold the covers down as a precaution against windy weather lifting the covers away!)

'KEEP IT SIMPLE'

The use of an immersion heater in your pond can work out quite expensive, so the use of a timer-switch will help make the electricity bill slightly more bearable!

A floating pond heater is another alternative.

Some elaborate designs have been used to enable access to the ponds while the covers are on, and I have seen many a complete horticultural polythene tunnel used to provide walk-in winter shelter!!

However, as regular readers will know, I advocate the 'keep it simple' (and inexpensive!) approach to the hobby, and polythene over wooden frames is perfectly adequate. The layer of air trapped between pond cover and water surface will help to keep temperatures up by a degree or two, and will probably be enough to avoid any ice forming.

If you don't have pond covers, then a layer of ice will have formed on severely cold days. Please don't be tempted to remove this: the shock waves caused by breaking the ice could kill your fish. If the ice is thick then drill a hole in one corner big enough to insert a hose into. If you then syphon a small amount of water through the hole this will lower the water level beneath the ice, creating a layer of air.

Thus, the water will be able to 'breathe' (ie, exchange gases with the atmosphere); while the 'ceiling' of ice will itself provide the same insulating effect as pond covers.

If the winter turns out to be mild please do not be tempted to feed your fish as they begin to stir at the sight of little sunshine. Such 'warmth' will be only minimal and it will

In the Bleak Midwinter

soon get cold again.

So, any food which the fish will have consumed will not properly be digested (many fishkeepers are unaware that Goldfish and other carp-related species do not have a stomach as such, but merely digest food as it passes along the gut).

Undigested food spells trouble, whether in the gut of a dormant fish, or uneaten at the bottom of the pond. Either way, toxins will be released by the rotting food, causing stress, related diseases and, probably, eventual death to the fish.

FILTRATION

For me, the pond water throughout the winter months always appears to be 'dark' and 'heavy', even in well-filtered ponds. This is partly due to the fact that light levels reduce drastically from the autumn onwards, giving the pond a much duller appearance. Regular partial water changes are an essential part of your husbandry — and please, do not turn the filter off for the winter.

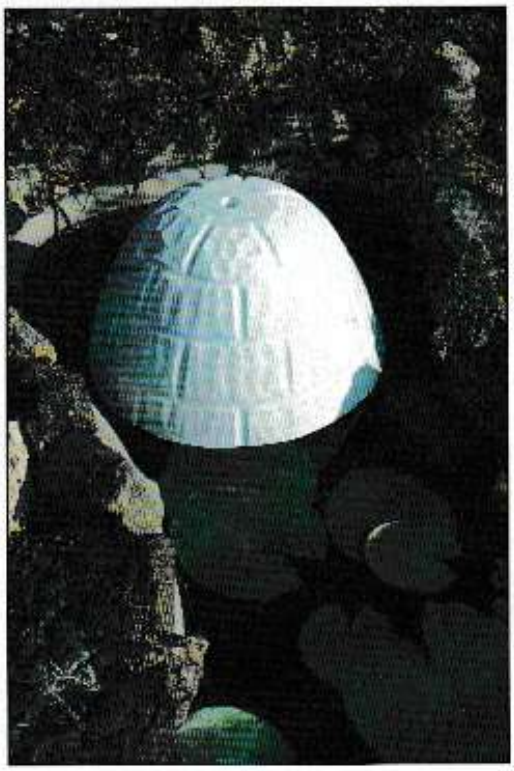
I know of one former Koi keeper who, at this time of the year, used to turn his pump off, strip his filter down, and leave it for the winter. The problem came to my attention when he asked me for advice on why his fish all died at the onset of the spring — every spring! Despite my advice to keep the filter running throughout the winter he continued his 'regime', only to tell me a couple of years later that he had turned his pond into a rosebed "because stripping the filter down every year was too much trouble!"

I do tend to reduce the rate of flow through the filter (by turning a valve positioned at the outlet of the pump, but it takes several months, if not a few years, to establish a good biological filter, and turning the flow off for even short periods will cause the bacterial colony within the filter to die off. And it is, after all, this bacterial colony which is the active element of your filter: the one which, effectively, purifies your pond water.

Of course no matter what precautions I take with my ponds over the winter months I still find that just one or two of my best Fancy Goldfish 'get got' by the low temperatures. I have found that particularly susceptible varieties are Moors, while any of the Veiltailed varieties are susceptible to ail-ments caused by the cold.

The answer is quite simple — bring them indoors for the winter. Try to transfer your most vulnerable specimens to indoor aquariums before outdoor temperatures fall too low. I also set up indoor 'growing-on' aquariums for young fish which have hatched and developed quite well in the pond throughout the year, but which will easily fall prey to the cold if you try to overwinter them outdoors for their first winter.

Usually, once transferred indoors, these fish will continue to feed well, and will be seen to grow significantly; while, of course, you have effectively 'extended' your season of enjoying your pond fish to a year-round pursuit.



An Igloo Thermo-dome will help to conserve heat loss.

The garden pond Ice Preventer.

A to Z of plants

By **DICK MILLS**

PHOTO BY A&P LIBRARY

JUNCUS

Many pondkeepers are fascinated by 'Bulrushes' so much so that they insist on referring to them erroneously in fact when, in truth, what they are talking about are Reed Mace — a case of, apparently, a rose by another name. It seems that the brown seed heads of this particular plant is the attraction but all too often the plant itself becomes an invasive menace as, once it gains a foot in any form of silt or pond substrate it races across the pond in not time at all. However, the preoccupation for strangely-shaped seed heads can be satisfied by considering one species of the genus *Juncus*, of the Family *Juncaceae*.

◀ JUNCUS ENSIFOLIUS (Dwarf Soft Rush)

This small rush has typical narrow leaves of the rush family but the seed heads are small black/brown spheres perhaps only half an inch in diameter. Despite its small size it is still prudent to keep this plant under some form of control by containerising it rather than leaving it to its own devices. It makes an interesting addition to the marginals around smaller, more modest-sized ponds, and can be grown in shallow water or in moist soils. It manages a height of around 12-18in (30-45cm). Looking through older water gardening books this species may have been referred to earlier as *J. conglomeratus*.

JUNCUS EFFUSUS 'SPIRALIS' (Corkscrew Rush)

To give someone a headache, ask them to untangle this plant! The long, cylindrical leaves constantly coil round and entwine with each other. Planted in a basket supported on bricks in midwater in a pond makes a feature of this plant as its leaves emerge like some green writhing monster from the depths.

The plant enjoys full sun and may reach a height of 12-18in (30-45cm) although its spread is often far greater. Flowers are borne but spotting them amongst the maze of foliage is difficult, to say the least. Propagation is done by division. It is advisable to remove any rogue leaves that insist on growing straight, although should you want such a specimen then *J. effusus* 'Vittatus' is the one to look for.

Alf Stalsberg introduces some of his favourite fish

Central American Cichlids

The Firemouth Cichlid (*Thorichthys meeki*).

PHOTO A&P LIBRARY

Central America or Latin America provide us with, in my opinion, some of the best known and most beautiful cichlids. You can find small cichlids, medium size cichlids and large and nasty ones, too. If you are not sure which cichlids come from Central America I think I can mention the name of one which you will probably recognise — the Firemouth with the scientific name *Thorichthys meeki*? This is a beautiful cichlid so I'll start with this group.

The genus *Thorichthys* was erected by Meek in 1904 and the fish belonging to this group has long been known as Cichlasoma, but after Dr Sven Kullander's revision of the genus Cichlasoma in 1983 he left a lot of the cichlids 'hanging in the air'. So it has been accepted to use Regan's section of the Cichlasoma genus of 1905, 1906-1908, where he had put these fishes in a group called *Thorichthys*. Regan only recognised three species in his section and they were *C. aureum*, *C. affine* and *C. callolepis*. Anyhow, the group consist of eight species; *T. affinis*, Günther 1862, *T. aureus*, Günther 1862, *T. callolepis*, Regan 1904, *T. helleri*, Steindachner 1864, *T. maculipinnis*, Steindachner, 1864, *T. meeki* (elleoti), Brind 1918, *T. pasionis* (Rivas 1962) and *T. socolofi*, Miller, 1984.

> Latin America provide us with, in my opinion, some of the best known and most beautiful cichlids.

UNDESCRIBED SPECIES

The genus is only found on the Atlantic slope in Mexico from Veracruz and south, but there is also some undescribed species and they have been found at Rio Montagua in south east Guatemala and north west in Honduras. So we can probably expect new fish to appear.

When we heard about *Thorichthys* we were told that they were from Mexico, and it was from there the first fish came to Europe.

Central American Cichlids

I have collected *Thorichthys* in clear water in Rio Grande in a place called Matias Romero, in the state of Oaxaca and Rio Grande where there is a tributary to Rio Coatzacoalcos. I have also found them in muddy water in Rio Papaloapan in the state of Veracruz, and clear water again in Rio Nututun 4.5km south of Palenque in Chiapas.

Like all fish *Thorichthys* is not difficult to keep if you give them the right conditions in the tank. The pH of the water in Mexico where I collected different *Thorichthys* fluctuated between 7.5 and up to 9, and the dH was from 2 up to 10.

In my tanks at home I keep the them happy on a pH around 7 and a dH around 2, and they spawn and seem to do just fine. There is one thing, though, they must have good water quality, and I give them that by changing half of the water amount in the tank each week.

FURNISHING THE AQUARIUM

But I have also been lazy and neglected to do the water change for several weeks, because there were other things I thought I needed to do. But I was punished hard for that and lost my fish; other than that these fish are easy to maintain.

To furnish the aquarium for the *Thorichthys* I use fine sand, because the fish is like the *Geophagus*, always sifting the sand for food. They will eat from your fingers when they get settled in, but then go back to sifting the whole tank for more food, when you stop feeding them at the top of the tank. They eat nearly everything and are also fond of earthworms. I feed my fish with a good brand flake food, Tetra bits, green peas, frozen food and again regularly change the water to maintain good quality.

For water circulation I use an internal Eheim which clears up the water, after feeding, and gives the fish some water movement and this seems to suit the fish well.

Thorichthys are substrate spawners and when they spawn they start by cleaning, mostly a flat stone, and also move some of the sand away. The female starts laying a few eggs which the male then fertilises, then she lays some more eggs and so on until they are finished. With a temperature around 26-27°C it takes about two days before the eggs hatch. The female takes the newly-hatched fry to a hollow in the sand where they stay until they are free-swimming. Occasionally, the female might move the fry to another hollow if she felt the fry were in danger.

When the fry are free-swimming I start to feed them with newly-hatched Brine Shrimp, as this food is eagerly taken. But don't forget the all-important water changes — you can change more often but not as much in the beginning. As soon you can feed the fry with crushed flake food and sifted Cyclops and Daphnia.

IDEAL FOR A COMMUNITY AQUARIUM

So when you see adult fish from the genus *Thorichthys* I think you will understand why these fish are amongst my favourites.

Another genus you will love is *Archocentrus* which have been a synonym for the Cichlasoma for many years. These small cichlids can be kept in a community aquarium and I can give these fish my wholehearted recommendation and when you see them I'm sure you'll agree.

A fish from this genus which you have probably seen, or perhaps kept in your tank, is *Archocentrus sajica* (Bussing, 1974), originating from the Pacific Coast in Costa Rica. If you don't know the fish, the photographs will give you an idea of what to expect. They are peaceful towards other fish but can chase fish from the same species, especially when they are about to spawn. They like to spawn on places that have some sort of shelter, behind or under a piece of bogwood, but not necessarily in a cave: they have been seen spawning in one of the corners in the tank on the glass, too. So you can see they are not difficult to breed.

The females take care of the eggs whilst the male watches his territory aggressively chasing much bigger fish away when the female is guarding eggs and later fry.

Ideal conditions to keep the fish should be: water temperature about 26°C, pH 7, dH about 6-8, but the fish is not fussy about the water as long as extremes are avoided. Change water regularly, this will help you to keep the fish healthy. They are more tolerant than *Thorichthys* but as I discovered don't play with with the fishes' lives just in order to see how long I can delay a change of water, or the fish die.

DRAMATIC COLOUR CHANGE

They eat what other fish eat, but will love you forever if you can provide them with some live food, like Mosquito larvae, Bloodworm and small Earthworms.

Something that features in most of the fishes in the genus *Archocentrus* is the dramatic change in colour when they are in the spawning mode, or start on the courtship ritual.

Another favourite is *Archocentrus septemfasciatum*, a fish found in south east Nicaragua, Costa Rica and also in northern Panama in Rio Sixaola, the river bordering on Costa Rica. The fish have several colour morphs of which, in my opinion, the most beautiful one I call the Red Type, and it comes from Rio Javilla near Canas in Costa Rica. For a change to the normal run of things it's especially the female colour that is impressive with the male more reddish/brown.

Archocentrus septemfasciatus (male) carries out a dramatic colour change when in the courtship ritual.

PHOTO: R.P. & C. PIGGHOW

Derek Lambert loves 'em — but make sure you know how big they'll grow!

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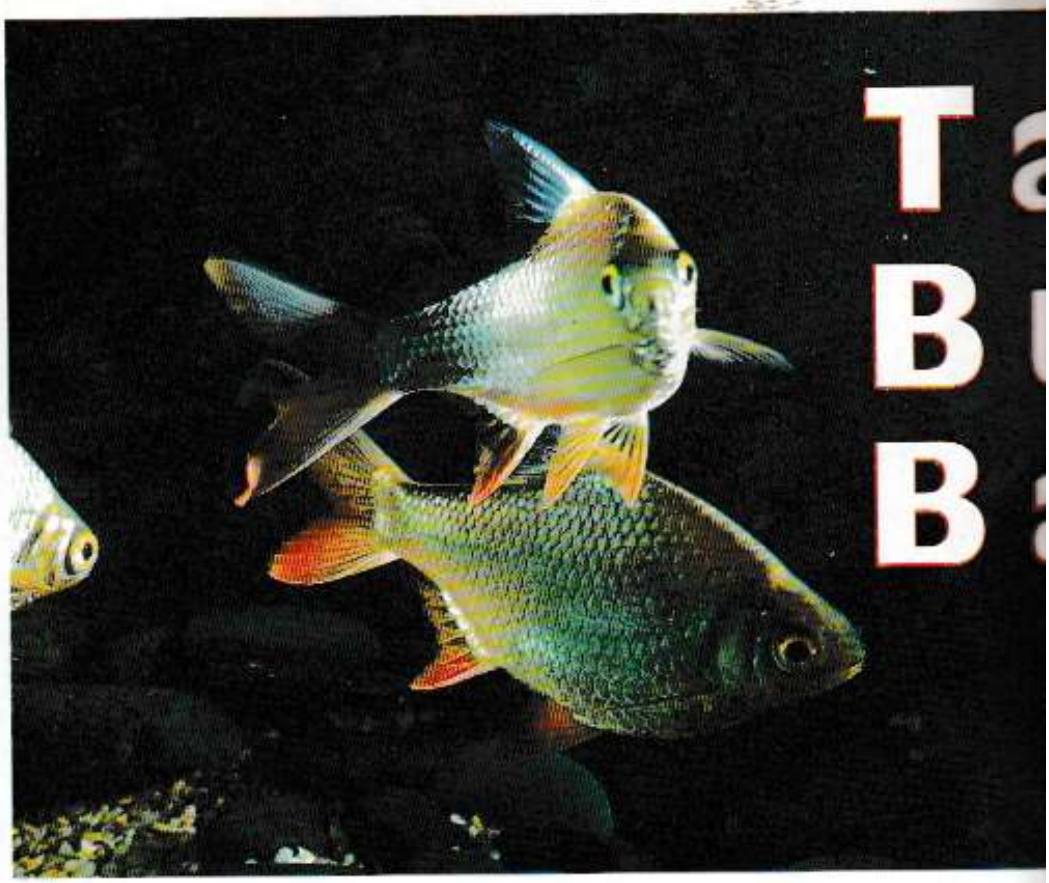


The Tinfoil Barb (*Barbus schwanefeldi*), one of the commonest of these fish to keep.

PHOTO: IAN RUSSELL

Barbs belong to the largest family of fish in the world, Cyprinidae, which has approximately 1,600 species documented so far. They occur in most parts of the world, but are not found in Australia, Central America, Madagascar, New Guinea, New Zealand or South America. Almost all species live in freshwater with just a few able to tolerate brackish conditions and one species of Redfin found in marine conditions.

Many Barbs are ideally suited to life in a community aquarium, being of small size, peaceful but lively temperament and with some striking colours. Most species kept by aquarists are in the 2 to 4in size range when adult but larger species are also kept. These are the tank buster barbs which range in size from 4in up to 2ft long and obviously need somewhat more spacious quarters than the average community aquarium.

The tank buster Barbs range in size from 4in to 2ft long and obviously need more spacious quarters than the average community aquarium.

LARGE AS POSSIBLE

If you are planning to keep any of these, then you need to sort out the aquarium first. This has to be as large as possible. My own is only 6ft long by 18in wide and deep, but this is too small for some of the larger species available, however, it was the biggest we could fit in the lounge and still have room for some furniture! We made sure we purchased the tank from a reliable dealer who only stocked tanks made to a high standard. This was not the cheapest supplier we could find but at least the aquarium was built using glass strong enough to withstand the water pressure generated in such a

ank
usting
arbs

The Spanner Barb (*Barbus lateristriga*), is a peaceful shoaling fish and makes a good addition to the Barb set-up.

PHOTO: H. P. & C. PIEDNOIR

large tank.

We also had them supply a stand to fit it. Once again, this was made of the highest quality materials and would be strong enough to take the weight. People often forget just how heavy water is but a large aquarium can weigh a ton or more when full. This has to be remembered when positioning the set-up as well. Upstairs is not a good idea unless your home has very solid floors.

FILTRATION

Next comes filtration. Most Barbs come from flowing streams, rivers or large lakes. These usually contain high levels of oxygen and this is what your Barbs will want in their aquarium. I use a strong power filter in mine and combine this with large regular water change and during hot weather additional aeration. Making sure the tank is never over-stocked is also important so I tend to give them more space per fish than is usually recommended. I work on 1in of body length per 12 sq in of surface area.

From the point of view of temperature, since they come from a wide range of different habitats there will be species which prefer cooler temperatures and others which like warmer ones. As in all community tanks a compromise has to be reached and I keep mine at 74°F (23°C) which seems to suit everybody fine.

Since most Barbs like grubbing about the substrate I like to use a gravel such as Dorset Pea. Most pieces of this are nice and rounded and will not harm their barbels. This habit of grubbing about in the gravel can cause problems with growing plants because they become uprooted. Stones placed around your plants may help protect them at least until they have developed a strong root system able to withstand the fishes' attentions. Use plants such as tough *Cryptocoryne*, *Vallisneria*, or Amazon Sword-plants rather than those which are usually sold as cuttings like *Cabomba*. If your barbs turn out to be plant-eaters, as some species are, then you may have to resort to plastic plants rather than real ones.

Moving on to the choice of

Tank Busting Barbs

species there are plenty to pick from. One of the commonest of these is the Tinfoil Barb (*Barbus schwanefeldi*). The common name is derived from the silvery body but it also has red fins and is one of my favourite fish for this kind of aquarium. It can grow to 14in in the aquarium and is a peaceful shoaling fish which will not harm smaller fish providing they are too large to be eaten.

Next on my list is the Clown Barb (*Barbus everetti*). This is the baby of the group and only grows to 4in when adult. They are, however, well able to take care of themselves in a mixed Barb tank and have very attractive colouration. The body is golden yellow with green blotches and all the fins are suffused with red.

Another of my favourite species is the Filament Barb (*Barbus filamentosus*). This species are most often seen as juveniles. At this stage they have a black blotch under the front of the dorsal fin as well as a darker black blotch in front of the caudal peduncle. They also have the most striking red fins. Later they change colour and lose the front blotch and red in the fins becoming a drab silver fish with a single large black spot. At this time many people try to dump them on their local aquarium shop without realising just what attractive fish they develop into as mature adults.

Males have long filaments on their dorsal fin and both sexes develop an iridescent green sheen across their back. Some of the red returns to their fins and a pinkish cast often shows on their bellies.

The Spanner Barb (*Barbus lateristriga*) in contrast always has the adult colour pattern. This is made up of three black lines which look like a spanner (in America this is called a T-wrench). Growing to 7in this is another peaceful shoaling fish which makes a good addition to the Barb Tank Buster set-up.

Another lovely species to look out for is the Longfin Barb (*Barbus arulius*). This species has reddish fins and dark blotches along the flanks. The dorsal fin of the male develops long filaments and as the fish mature the red fins become much brighter colour. An adult at about 4in it is one of the smaller large barbs but one which will add a splash of colour to any set-up.

GREW AND GREW!

So far I have only concentrated on the species which fall within the catch-all genus of Barbus but there are a lot of fish which are closely-related to these but belong to other genera. You will, however, often see them sold as Barbs and, since their requirements are the same, they can be kept in a big Barb set-up. The one which caught me out was *Leptobarbus hoeveni* which I purchased as a 'Black-line Barb'. Since it was in a tank with a green sticker for community fish (and the nice man in the shop told me they were full grown) I decided to have one of these in my 3ft community aquarium. Well, it grew and grew until it could eat any of the fish in my tank. By that time we had found out what it was and knew it would grow at least 18in long so we purchased our 6ft aquarium to house him in and built up a collection of large Barbs from there.

Other species in the same category are *Hampala macrolepidota*, *Osteochilus hasselti* and many species belonging to the genus Labeo. Imposing fish all and lovely additions to a large Barb community, providing you have the room for fish which grow 2ft or more in length. In their native countries most of these species are considered food fish.

RAVENOUS FEEDERS

All Barbs and their close relatives eat any foods they are given and when they reach a reasonable size should be fed pelleted, or granular, food rather than flakes. You can also feed them pieces of cooked potato, peas or even carrots. Chopped Earthworms are a particular favourite as are maggots and any other live foods they can grab. They are ravenous feeders and will stuff themselves silly if given the chance. The obvious result of this is a lot of waste will be produced, so large water changes and regular filter maintenance is a must.

When looking for fish for your Big Barb aquarium it is worth remembering they will grow very quickly if fed well and are given the right conditions. So, it is well worth buying small young fish to grow up rather than paying the extra for large specimens which may be oldsters. You also have the pleasure of watching these very young babies grow up into beautiful adults.

The Filament Barb (*Barbus filamentosus*) is another of my favourite species.

PHOTO: LINDA LEWIS

Nick Dakin considers the genus most people think about keeping as their first marine

PHOTOGRAPHS BY THE AUTHOR

Classy C

Pink Skunk Clownfish, *A. perideraion*.

Clownfish, or Anemonefish as they are also known, never attain excessively large sizes.

Mention coral reefs to any group of people and it is almost certain that a reasonable proportion will have a picture in their minds of Clownfish cavorting amongst the tentacles of an anemone. For the aquarist the association is even stronger, as this familiar relationship has come to symbolise the very essence of the marine fishkeeping hobby. One can easily lose count of the number of occasions the Clownfish has been used as a commercial logo, such is the potency of its symbolism.

FAMILY: POMACENTRIDAE

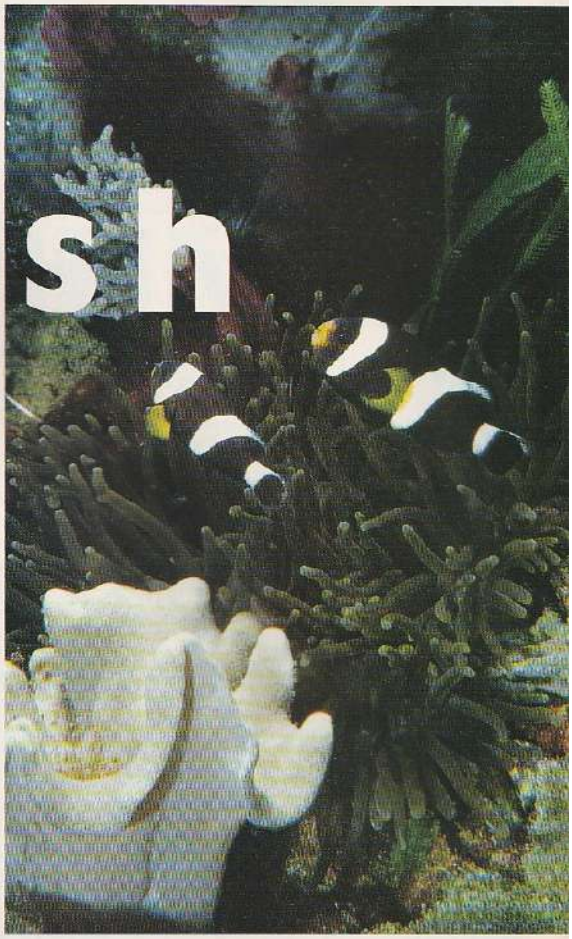
It seems likely that all species of Clownfish have been discovered and documented. There are 26 species recorded, 25 of which are placed in the genus *Amphiprion* and one occupying a genus on its own (*Premnas biaculeatus* — The Maroon Clownfish). Of these 26 species only about half are commonly available in the aquatic trade. The remaining Clownfish are usually situated in locations that are difficult to reach, or are the subject of collection restrictions.

Clownfish, or Anemonefish as they are also known, never attain excessively large sizes; in the wild 5in (12.5cm) is usually the maximum, while aquarium specimens grown on from juveniles rarely exceed 3½in (8.75cm). Diet in the wild generally consists of various zooplankton and algae drifting in the current. Clownfishes will never stray very far from the safety of their Sea anemone, as they would soon become an easy target for a hungry predator; therefore, all food must be plucked from the current in the immediate vicinity.

COMMENSALISM

Every species of Clownfish forms

lownfish



Saddleback Clownfish, *A. polymnus*.

a close relationship with an Anemone (often one or two particular species of Anemone) and this has always been regarded as symbiotic but is now more properly described as commensal. Many aquarists will be unfamiliar with this term, but commensalism may be seen as the first step towards true symbiosis whereby two partners draw an advantage from living in close association but are not fully reliant on each other as in a complete symbiotic relationship. In this case the Anemone provides a safe home for the Clownfish, which, in turn protects the Anemone from potential predators owing to a highly-developed territorial nature.

Larger Anemones may accommodate a number of individuals in a distinct hierarchy. There will always be a dominant female and male which also are the only pair to breed. The other fish will all be male in gender. However, Clownfish, in common with other Pomacentrids, possess the ability to change sex from male to female should circumstances dictate. The loss of the dominant breeding female causes a chain reaction whereby the dominant male changes sex to become the dominant breeding female and the next male in the hierarchy subsequently adopts the role of the dominant breeding male. As a consequence, all other individuals take one step up the hierarchical 'ladder'. In this way nature ensures that the reproductive capabilities of the Clownfish colony are never impeded and guarantees its continued existence.

It can also be noted that once an individual adopts a particular Anemone with its incumbent compliment of Clownfish it will never leave by choice. It will remain there for the duration of its life, or until the Anemone dies. Under these circumstances it is unclear what happens to the colony but it appears likely that, in the absence of a vacant Anemone close by, all the fish are likely to be predated upon fairly quickly.

ANEMONES BEING 'FED'

Many aquarists have witnessed Clownfish appearing to share their food with Anemones and wondered why this should be. However, it seems highly unlikely that Clownfish actually consciously 'feed' their host Anemone. They are much more likely to rush back to an Anemone with a large piece of food that cannot be immediately consumed as a protective reaction brought from the wild state.

With other, potentially dangerous, fish lurking in close proximity to pieces of food the Clownfish is under threat from attracting their unwanted attentions while in open water. It makes sense, therefore, to dash back to the safety of the Anemone as quickly as possible with the food. Once in the tentacles the Anemone can engulf the morsel and prevent the Clownfish from gaining access to it. To all intents and purposes it appears that the Clownfish has 'fed' the Anemone, whereas in truth, it has just protected itself from competitors and predators.

BREEDING

All Anemonefish are demersal spawners and they lay their eggs on a flat, hard substrate close to, or preferably under the protection of, the host Anemone's tentacles. To do otherwise would soon result in a loss of the precious eggs to any passing creature with a taste for a valuable source of protein.

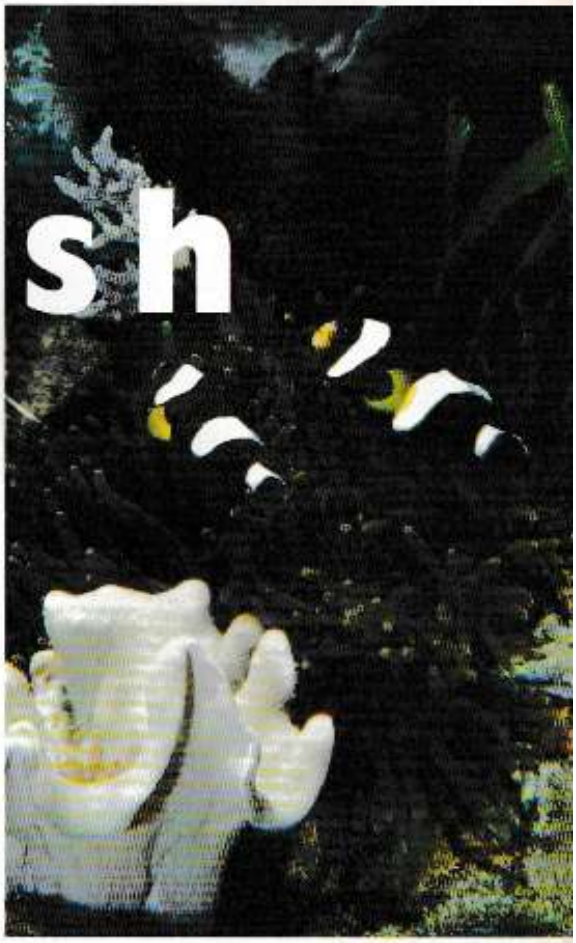
The eggs are mainly cared for by the male of the dominant breeding pair and always hatch under the protection of total darkness after some 7-10 days in a natural rhythm directly connected with the phases of the moon. The larvae — for they are not developed enough to be regarded as fry in the accepted sense — then become pelagic and migrate upwards to inhabit the plankton layers to feed and develop. Most will fail to survive this stage of their lives, but of the small number that do a place must still be secured in a suitable Anemone back on the reef.

SEA ANEMONES

Clownfish are not found in the tropical Atlantic and therefore do not inhabit *Condylactis* spp. Anemones, which are endemic to the Caribbean. *Heteractis* spp. and *Stoichactis* spp., are, on the other hand, favoured host Anemones and are located throughout the tropical Indo-Pacific region.

Anemones are potentially dangerous invertebrates and most fish give

lownfish



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Anemones are potentially dangerous invertebrates and most fish give

them a wide berth. If they were to touch the tentacles a painful sting would be the result, possibly leading to death as a prelude to being engulfed and consumed by the Anemone. Pomacentrids, Anemonefish and Damsels are immune from this fate owing to a special mucus coating. This masks the fish's true identity as a potential meal. In tests, where Clownfish have been stripped of their mucus, the fish is stung like any other intruder.

In the aquarium Clownfish can survive quite happily in the absence of an Anemone, but most marinists will want to witness the special relationship they have with their host. In such cases it should be remembered that Anemones are far more sensitive than Clownfish and require optimum water and lighting conditions.

Classy Clownfish

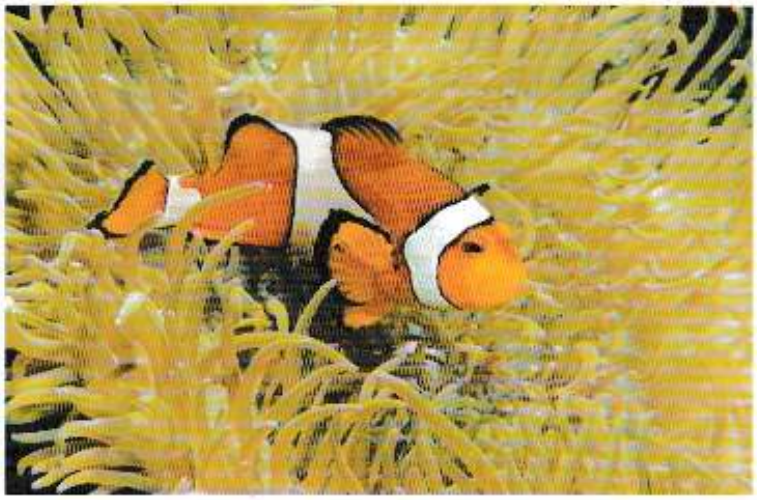
HEALTH

In poor water conditions Clownfish are susceptible to Whitespot, Oodinium and other parasitic diseases. Fungal and bacterial ailments are more common in newly-imported fish. Proprietary copper-based medications are usually helpful when treating such diseases but long term success can only be achieved by providing a suitable environment.

When purchasing a Clownfish they should appear active and alert to their surroundings. There must be no signs of marked skin or ragged and split fins. Clear and bright eyes are essential. Avoid specimens that are swimming erratically, or sulking in a corner. Tank-bred specimens may lack the intensity of colour that wild fish have, and the white marking may not be complete; however, this is nothing to worry about if the individual is otherwise in good health. Indeed, given a good varied diet and proper environment the intensity of colour often deepens given a few months.

FEEDING

Brine Shrimp and Mysis, both live and frozen, are eagerly accepted and can form part of a staple diet. Marine flake, squid and other meaty foods of a suitable size make excellent supplementary foods.



Common Clownfish, *Amphiprion ocellaris*.

Clark's Clownfish, *A. clarkii*.

LONGEVITY

Clownfish are long lived in the aquarium and have been known to survive in excess of 18 years given care and attention.

OPTIMUM CONDITIONS

A tank of at least 114 litres (25 gallons) should be supplied. Ammonia Nitrite: zero. pH: 8.1-8.3. Temperature: 25-26°C (77-79°F). Nitrate: less than 20ppm total NO_3 for a fish-only tank; 5ppm or less in a reef aquarium. Specific Gravity: 1.020-1.024. Dissolved Oxygen: 6-7ppm. Water Changes: 15-25 per cent every two weeks. Water Circulation: A varied water circulation pattern is appreciated, from brisk to slack. Lighting: Moderate without an Anemone, intense in the presence of one. Filtration: A protein skimmer and activated carbon should be regarded as standard on all aquaria housing Clownfish.

SPECIES

Some popular and readily available species include:

COMMON CLOWNFISH (*Amphiprion ocellaris*) 2in (5cm). The most frequently kept

Clownfish. Attractive and generally quite peaceful.

MAROON CLOWNFISH (*Premnas biaculeatus*) 4in (10cm). One of the larger species that thrives in the absence of an Anemone.

FIRE CLOWNFISH (*A. frenatus*) 3in (7.5cm). Colourful but can be a little aggressive in defence of territory. One of the easiest to spawn.

Classy Clownfish

CLARK'S ANEMONEFISH (*A. clarkii*) 4in (10cm). Another larger species that can be quite dominant. Generally easy to keep and spawn. There are many colour variations depending on location of collection.

PINK SKUNK CLOWNFISH (*A. perideraion*) 2in (5cm). Subtle colouration and a fish full of character make this a popular choice.

BLACK-FOOTED CLOWNFISH (*A. nigripes*) 2½in (6.25cm). An attractive species that are a little shy and sensitive.

Black-Footed Clownfish, *A. nigripes*.

CAPTIVE BREEDING

Clownfish are one of the 'easiest' of marine fishes to raise in captivity. Even so they still require a tremendous commitment on the part of the hobbyist. Many quality books have reference chapters giving full details of the technique.

Clownfish are by no means an endangered species in the wild but by raising these most popular fish in captivity we reduce any pressure on wild stocks and tank-bred specimens should be purchased wherever possible.

SHORE WATCH

BY ANDY HORTON

In the column for the year I will examine some aspects of the biology and behaviour of the rock pool fish and marine invertebrates that are both interesting and useful knowledge for aquarists.

With the shorter days the opportunities to visit the shore diminish. Winter for most of us means a break from rockpooling and an opportunity to appreciate the home aquarium.

CHOICE OF CAMERA

In last month's column I mentioned that I would give a few tips for readers wishing to take photographs in their tanks at home.

Unfortunately, there is only one type of camera that is capable of producing prints or transparencies of an acceptable quality, or as good as the photographs in this magazine. This is the camera known as the single lens reflex, SLR for short, and it is these cameras that are still used by most serious photographers and photo-journalists. The modern zoom compacts and digital cameras, although excellent tools for general photographic work, are not sophisticated enough for this specialised type of photography.

Single Lens Reflex

The most important characteristic of the SLR camera is that the photographer, when looking through the viewfinder, actually sees what he is going to photograph through the lens of the camera. This is achieved by mirrors inside the camera. This is crucial in close-up work. If you look through a viewfinder without the mirrors you are liable to miss the target and this is what happens when you try to use the compact cameras.

The ability to change the lens is the strong point of the SLR system. These 35mm SLR cameras come usually, but not always, with a standard 50mm lens. For aquarium photography the best extra you can buy is a close-up filter that screws into the front of the standard lens. With one or two of these filters on the front of the lens most aquarium fish will fill the frame.

Modern SLR cameras come with automatic focus, but also with a manual focus function. For aquarium photography it is best to use the manual focus. I usually pre-set the focus and move the camera to and fro until the subject is sharp in the viewfinder.

If you do not have a dedicated flash gun and only have a low powered flash gun with a guide number of 16, try an exposure of f.16 using 400 ASA film. The shutter speed can be put on the bulb 'B' setting and the flash can be triggered manually. This method was used to take this picture of the Strawberry Beadlet Anemone, Actinia fragacea.

PHOTO: ANDY HORTON

Aperture and Flash Lighting

Modern SLR cameras also come with automatic exposure so that the novice can just point and shoot. However, the automatic exposure can overridden or various different programme modes can be used. The best choice is to use the mode known as 'aperture priority' and choose the smallest aperture which is the highest f number of the lens, usually f.16. This gives the greatest depth of field and ensures that the maximum amount of the subject is in focus.

This is not meant to be a 'teach you how' instruction text, but just a few guidelines which I found out by trial and error. It was only when I started using a flash gun that I began obtaining successful pictures. The reason for this is because the amount of lighting in most aquaria is inadequate for photography.

The flash gun cannot be mounted on the camera as the flash light bounces off the front glass and straight back into the camera lens. Instead the flash gun is used off the camera (OTC) angled at 45° or greater to the glass tank, and often mounted at 90° immediately above the surface of the water.

These special flash guns are linked to the camera by an electronic lead. A sensor on the camera determines the correct flash duration. Some models of SLR cameras have through the lens (TTL) flash metering and can use a dedicated flash gun. This is the easiest method but you must ▶

◀ make sure that the flash gun can be used connected to the camera by a special lead and still retain the special TTL flash metering.

I have used 100 ASA transparency film for almost all of my photographs. You cannot save money on film by using the new digital still cameras as they not suitable in low light conditions.

WORLD OCEANS DAY 1998

The British Marine Life Study Society will be holding a few photographic exhibitions to celebrate World Oceans Day which occurs on June 8 each year. Readers are invited to send in their prints of the wildlife of seas around Britain and pictures taken on the shore and in the aquarium for public display. If you have any high quality prints you want to put on show please write in with full details to the address at the foot of this article, enclosing return postage and your name and address.

All letters will receive a reply.

UNDERWATER PHOTOGRAPHY

My aim in tank design is always to provide conditions and appearance in the aquarium that mimics the natural rock pools on the shore. Ideally, any photograph should be indistinguishable from a picture taken under the sea.

However, I have great admiration for divers that actually enter the world of the fishes and take pictures in the wild. A new book published by Salamander Books on September 1 1997 called 'Under Northern Seas' is the best advertisement for the marine life in the seas around Britain I have ever seen with some absolutely stunning pictures taken by Linda Pitkin, with an interesting documentary (ISBN 0-86101 973-3). My favourite picture in the coffee table book is a Brill, a flatfish camouflaged against the sand on which it is resting, on pages 26 and 27. There is a baby Lumpsucker resting on a kelp frond and a portrait of a huge Basking Shark that would grace any wall, as well as the first photograph of a Norwegian Topknot in a popular publication. The book is a 'work of art'.

The Long-clawed Porcelain Crab, Pisidia longirostris, is an aquarium study of a very small crab with a carapace the size of a pea. The magnification was achieved by the use of extension tubes fitted between the lens and the camera body. If you look closely you will notice that this crustacean has only eight legs. It is not a true Brachyuran crab but an Anomuran related to the hermit crabs. PHOTO: ANDY HORTON

AQUARIUM COOLERS

The compressor on my 'beer cooler' packed up during the heatwave this summer. I had a spare 'cooler' but this did not work either, so I had to return some fish and sea anemones to the shore from where they were collected. Beer coolers are not really designed for the job of cooling aquaria so I looked around for special aquarium coolers available in Britain. The cheapest cooler sold by New Technology retails at £549 + VAT and is capable of cooling tanks up to 500 litres (110 gallons).

These coolers are used mostly by tropical marine aquarists who illuminate their tanks with powerful metal halide lights at tropical light levels. These lights can raise the temperature by 10°C so a cooler becomes essential.

In the heatwave this summer the light levels reached 7000 Lux on the Sussex shore. The handful of British sea anemones that contain zooxanthellae algae like the Snakelocks Anemone, *Anemonia viridis*, and the Daisy Anemone, *Cereus pedunculatus*, require very high levels of 4000 Lux at least for part of the year.

Sea Anemones in aquaria. This picture was taken without flash and a blue filter placed over the lens to counteract the lower colour temperature of the aquarium lighting. PHOTO: ANDY HORTON

SUBPLOT

Minimum Equipment needed for Aquarium Photography

(1) A single lens reflex (SLR) camera with through the lens metering (TTL) in 'Aperture Priority Mode', and a manual focusing option.

(2) A compatible 50mm standard lens with glass close-up filters than screw in the front of the lens. The diameter of the lens screw is usually 49mm but always check this. These filters are marked +1 to +5. I would recommend purchasing either a +3 close-up filter, or both a +2 and a +4 filter.

(3) A special flash gun that can be used off the camera (OTC) with a lead that connects to the camera, with a sensor either in the camera (with TTL flash metering and a dedicated flash gun) or the sensor attached to a special lead with the flash gun. You may have to insist on these specifications as camera retailers have been known to try and sell flash guns without the facility of OTC operation.

The British Marine Life Study Society will help readers who have any difficulties or wish to pursue their interest in the marine life around the British Isles. The first enquiry will be answered free of any charge, but please enclose a SAE.. For more information write to: Andy Horton, British Marine Life Study Society, Glaucus House, 14 Corbyn Crescent, Shoreham by Sea, Sussex. BN43 6PQ. EMail: 106127.206@CompuServe. Internet URL= http://ourworld.compuserve.com/homepages/BMLSS/homepage.htm (England) Internet URL= http:/www.cd.ac.uk/~evah01/bmlss.htm for BMLSS (Scotland).

Introducing MARINES

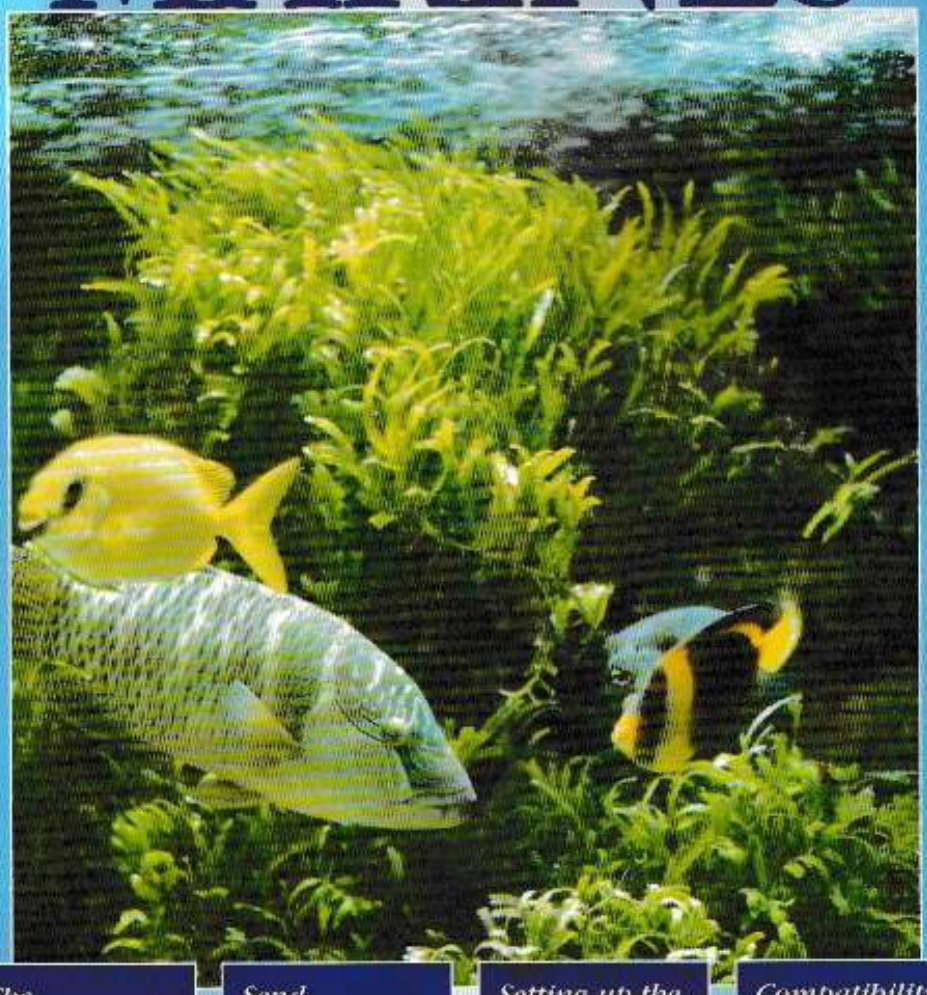


PHOTO: ALP LIBRARY

The Marine Scene

Send in the Marines

Setting up the Marine Aquarium

Compatibility between Species

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Introducing MARINES

PHOTO: M.-P. & C. PIEDNOIR

It is within every aquarist to set ambitions, aims or goals — let's face it, without such people pioneering over the years in the many diverse fields of aquatic interest the hobby would not have reached the level of popularity it enjoys today. Challenges are there to be met whether they are self-imposed or just Mother Nature being wilfully obstructive in our assumed rate of progress on the road to success.

One of the biggest challenges that still offer some sense of pioneering work to be done is, despite huge advances in technology, knowledge and practical experience, the keeping of marine fishes.

Like many of today's fashions or whims much of the attraction can be laid at that convenient scapegoat, the television set, through whose window we can almost experience the wonders of the coral reefs. A close second for the blame must be the increasing number of people taking exotic holidays where they come 'face to fin' with these colourful creatures. Is it any wonder that there is a strong urge to keep such fish at home?

Several strong points are raised about keeping marines, both from the ethical and practical viewpoints, which will be placed before you in the pages of this Supplement but to raise them here would be to deny our contributors' worthy efforts. Suffice to say that there is much to think about before you take that plunge into salty waters; never is there a better time than now to stop and consider all the implications.

Of course, if you are already a practising marinist there will also be topics to make you examine your own philosophy towards the subject and for even further enlightenment we direct you to this month's free separate 32 page Booklet where you will find no less than 101 hot tips for successful marine keeping. Who knows, at least one of our readers may well turn out to be the next (or even the first) person to make his or her mark on this fascinating area of fishkeeping!

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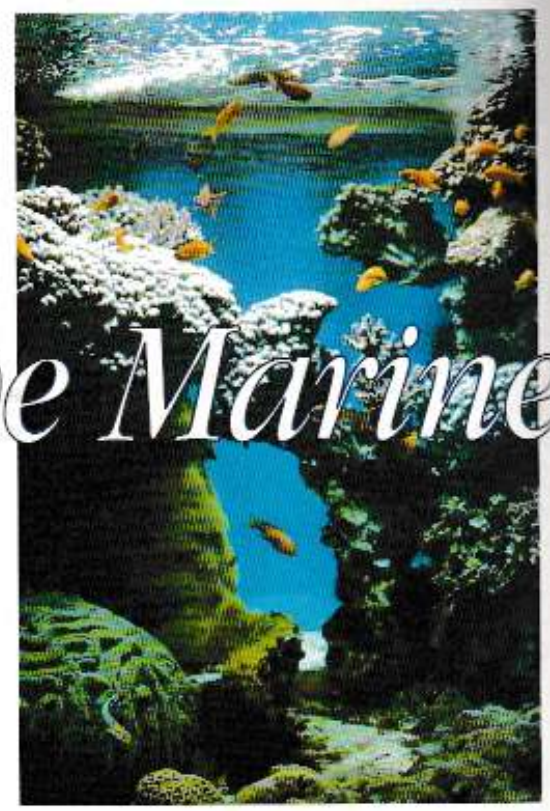
The Marine



Today, the aquarist can go ahead with marines with confidence, thanks to readily-available, reliable equipment and any amount of information, but there's a lot to choose from ... so plan well ahead

PHOTOGRAPHS BY A&P LIBRARY

If you mentioned 'marines' a few years back it would have been greeted by a sharp intake of breath by the listener followed by the taking up of a bended knee position as a deference to someone being in the presence of money, although soon to be parted from a major part of it! To be blunt, early marine-keeping didn't always get an enthusiastic Press and some people rated the survival of most species in captivity in domestic marine aquariums being not much better than six months at best.

The reason for this short-lived captivity was the lack of information and practical experience available, for unlike freshwater fishkeeping's centuries of experience, marines were very much a new branch of the hobby and it took time to realise that the same procedures would not work. The problem, perhaps on two counts, was the water.

On one hand, it wasn't the saltiness that was the problem but its day to day, long-term quality. The marine fish's habitat is nowhere as variable as that of freshwater species despite being many, many times the area (of the 77 per cent of water covering the earth's surface, 98 per cent is saltwater). This means that the water conditions vary very little indeed and whilst the freshwater fish can adapt to changes in water conditions relatively easily, the marine, or saltwater, fish cannot. As a result the conditions in the saltwater aquarium must be kept as stable as possible within very narrow tolerances.

Deleterious effect on aquariums

On the other hand, the saltiness was a problem of sorts, apart from it being necessary to maintain its proper 'strength' the saltwater had a very deleterious effect on most aquariums — it corroded anything metal, including the very tank frames.

Until both these problems were overcome then marine keeping was stuck in a stationary time lock. However, things soon began to change for the better with the arrival of all-glass tanks which through the miracle of silicone sealant dispensed with frames and were quite impervious to the corrosive salt water. Another contributory factor would have been the improvement of transportation which meant that the fish spent a lot less time in transit than before with the chances of arriving in good health much higher.

Increased interest in marines

Once supply and maintenance problems were solved the impetus was self-sustaining and the

interest in marines continued to increase. In more recent years the very same air transportation that brings the fish to the aquarist is also likely to be used by the aquarist in the reverse direction — going on holiday — often to the very places where the fishes can be seen in their native surroundings, yet another incentive to keep them. A further, and most welcome factor, is that through the latter activities marinists also get to know which fish are more suitable for home culture and which exotic specimens are best left in their native homes — an important conservation point. A word of warning should be given at this stage: the majority of marine fishes commercially available for the aquarium are wild-caught. Whilst they are relatively expensive at the best of times, many of the most truly beautiful (and most expensive!) species are specialist feeders, feeding only on certain natural foods in their native habitat; it is unlikely that such foods have been replicated by the fish food manufacturers to any great extent and you will, therefore, have paid a high price for the dubious pleasure of watching the fish fade away before your very eyes. Always make sure marine fish are feeding regularly (and do ask on what) before buying.

Scene

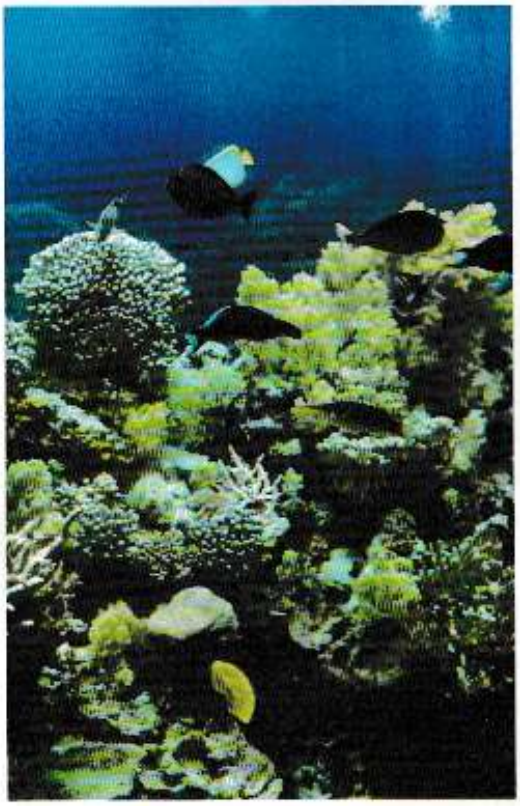
Soundly backed system

Turning to technological matters the would-be marinist today finds the whole system has a very sound backing: salt mixes, once inconsistent in quality are now totally reliable and easy to use. Test kits are equally easy to use, and thanks to clear and comprehensive instructions (and diagnostic explanations), any subsequent necessary actions are equally simple to put into action.

Although today's range of equipment is as sophisticated as anything else, with the involvement of computerised, automatically controlled monitoring and dosing systems at the top of the range, the beginning marine fishkeeper can start off with the basic equipment with much more certainty of success than the earlier pioneers.

The advent of aquariums with self-contained filtration systems, as well as those with external dedicated systems in the cabinet beneath, has led to the now popular 'reef' aquarium where another aspect of marines can be explored — the fascinating world of invertebrates where each piece of living rock is home to a myriad of 'tenants' each of whom have their own particular lifestyle to play out under you gaze.

A criticism of such complete systems might be that they encourage 'instant fishkeeping' without too much forethought or planning on the part of the aquarist. As was pointed out earlier, freshwater fishes could probably survive the early 'teething troubles' in a tank operated by a complete novice with little understanding, but marine fishes would probably not be so lucky and a sizeable



Introducing MARINES

The Marine Scene

financial outlay could be wasted and a disappointed fishkeeper saddles the whole hobby with an unfortunate reputation on just one experience.

Maintaining the balance

Returning to reef tanks, there is ample scope here for including within the system macro-algae culture. These primitive plant forms, along with other algae play an important role in maintaining the balance of things especially in association with invertebrate life, although care must be exercised not to include vegetarian-minded fishes or those that prey on invertebrates!

Decoration of the marine aquarium will most certainly include corals — both dead and alive specimens can be utilised — and it is quite feasible to culture your own stock of soft corals from 'cuttings' (see Coral Culture, *A&P*, February 1997).

Just like freshwater tropicals, the marine system also requires regular maintenance tasks although the saltwater aquarium has one major difference: during regular partial water changes, the removed water must be replaced with synthetic ready-mixed saltwater rather than just plain tap water. This is an extra expense that you must be prepared to accept for there is no escaping the fact that keeping marines in the close confines of an aquarium seriously, and adversely, affects the quality of the water whose optimum condition must be upheld at all times.

Comparatively new

Compared to the rest of fishkeeping, marine tropical fishkeeping is still comparatively new; this fact provides an opportunity for genuine research into all manner of fishkeeping activities as there is much more 'pioneering' work to be done, especially in the breeding aspect. Various species of Clownfish, Damselfish and Gobies are now regularly bred in captivity but the individual fishkeeper can still contribute important knowledge and experience to assist in furthering the success of others.

Up until this point we have been considering keeping tropical marine species and the keeping of coldwater saltwater fish and invertebrates may not have occurred to some people, yet the proportion amongst them who haven't, at one time or another, delved into the depths of a seaside rockpool must be minute. Native shoreline fishes and invertebrates are both easy to collect and, within reason fairly easy to keep (see Shorewatch, each issue of *A&P*), if species outgrow their aquarium it is a simple matter to return them to the wild and replace them with younger specimens.

Coldwater marine fishkeeping brings maybe two problems — space and heat. Although cold water contains more oxygen than that at 'tropical' temperatures, coldwater animals require more of it and so their aquarium must be proportionately larger in order that this vital gas can continuously be available in adequate amounts assisted, if necessary through extra aeration. The heat problem will only be encountered during the summer months, when water temperatures in the aquarium can rise to quite high levels. It is important that steps are taken to keep things as cool as possible; in this instance the adding of cold water straight from the tap will not be the answer (the salinity would be drastically affected), but immersing a sealed bag of ice cubes in the tank would be. The decision to make a high financial outlay required for a chiller unit as insurance against hot summer days (which may or may not manifest themselves all that often) is a debatable subject for discussion.

Understand how things work

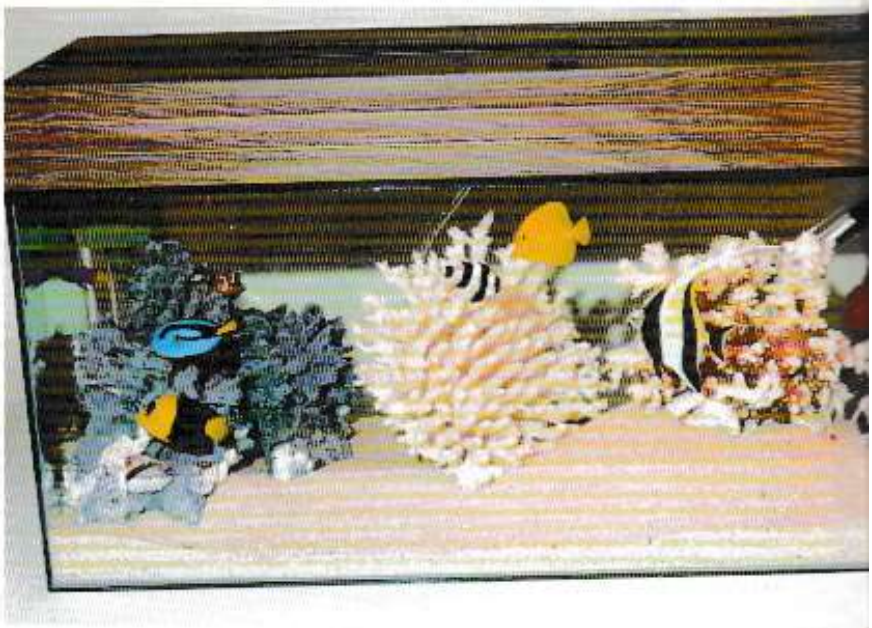
Should you decide to take up marines then (like marriage) do not undertake it lightly. It is vital you understand how things work and the compatibility (or not) of the livestock well before you mix up your first batch of saltwater. There is no denying that the marine aquarium fascinates all who set eyes on it but it will only bring its own particular rewards if you treat it correctly.

▼ A typical Mediterranean sea anemone (*A. viridis*).

Introducing MARINES

Setting up Marine

Only by understanding the 'Why' as well as the 'How to' will your newly set-up marine aquarium operate successfully



▶ A typical new tank set-up.
PHOTOGRAPH: A&P LIBRARY

It would be quite impossible to condense into a few pages all the knowledge needed to successfully start a up a marine system; the following is intended as a brief summary of the actual steps involved.

Much of the information needs qualification — and much, of necessity, has been omitted!

The Aquarium

Use an all-glass, or acrylic, aquarium holding an absolute minimum of 20 gallons of water, after due allowance for displacement by substrate, furnishings, equipment, etc — a 30 gallon capacity is preferable. An ideal beginner's tank would be 36x18x15in. In marine tanks, volume is all important. You will need a hood to hold fluorescent lights, or an leave the top open to accommodate hanging-type lighting systems.

The aquarium is best situated in a fairly light situation. For a tank containing invertebrates, the lighter the better, since there is no real artificial

the Aquarium

substitute for sunlight. Regular water changes are an important part of marine keeping, so bear this in mind when choosing a spot — the tank must be easily accessible for maintenance.

Filtration

Marine keeping is advancing so quickly that today's guidelines are liable to be quickly overtaken by new happenings. Years ago nearly every marine aquarist would automatically use an undergravel system, but today 'reef tanks' are becoming increasingly popular. However, most beginners will still set up the tried and tested system, so we shall concentrate on this first.

Basic Downflow

Fit an all-over fitting undergravel filter. Use an interlocking plate system to cover the entire base, and fit the uplift tubes where you choose. Cover the entire area with well-washed Dolomite gravel, at the rate of 10lbs per square foot. Fit a 'Gravel Tidy', and then spread over a suitable amount of rinsed coral sand — probably a little more sand than gravel.

As a general rule, fit an uplift tube every 18in or so. Air pumps were traditionally used to power undergravel filters but, with the advent of inexpensive and reliable powerheads, noisy

▼ Tubeworms such as *Spirographis* need clean water.

PHOTOGRAPH: M.P. & C. PIENOIR

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Setting up the Marine Aquarium

air pumps are now just used to supply air, leaving the powerheads to circulate the water. In order to calculate the size of powerheads needed, work out the total volume of the tank and fit powerheads capable of turning over the water at a minimum rate of four times per hour.

Each cubic foot of water contains 6.25 gallons, or 28 litres. So our beginner's tank nominally contains 157 litres ie. 3x1.5x1.25x28 = 157), although, after due allowance for substrates and decor, etc. a figure of 140 litres would be nearer the mark. Assuming two powerheads we need 140x4 total, ie. 560, so two powerheads at 280 litres per hour each. Powerheads are best at moving water, air pumps are best at proving aeration, an essential prerequisite for marine tanks.

The mechanics of a biological filter system are simple: by passing the tank water through firstly a thin layer of sand and then through a coarse layer of gravel, one provides the three necessities to maintain a colony of friendly nitrifying bacteria — the animals which are the basis of all successful marine aquaria. In order to thrive and reproduce, nitrifying bacteria need:

(a) Food — the waste products, in the form of ammonia and nitrite from the fish and invertebrates, uneaten food (there should not be any of this in a perfect world), decaying leaves, etc. This is brought down to and through the filter bed by the water movement plus, of course, by gravity;

(b) A Fixed Surface — the coral sand which, being porous, has a very large surface area; and

(c) Oxygen — which is relayed by the flowing water as it passes over the sand. One of the reasons for the gravel under the sand is that too thick a layer of sand would readily clog, thus reducing both the water flow and the oxygen, so the separated two layers allows the best and most efficient flow-through.

Once the nitrifying bacteria are introduced (see 'Maturation'), they will continue to thrive and do their job as long as the three conditions outlined above are present.

Reverse Flow

The conventional method described above draws tank water down through the sand. The main disadvantage of this is that detritus is also drawn down through the gravel, and sooner or later the sand will become clogged and need completely removing and replacing. Good experienced aquarists can delay this upheaval to once every five years or so, whereas newcomers find that it is necessary far more frequently. Not only is the process time-consuming and messy, it is very disruptive to the whole well-being of the tank's inhabitants.

A reverse-flow system utilises an undergravel filter as before, but the water movement is provided by an external power filter, with the return flow pipe connected to the undergravel uplift pipe. Thus, the water is first sucked out of the tank, passed through the filter media in the canister filter, before returning (much cleaner) back into the tank and up through the gravel. Most of the dirt generated in the tank is trapped in the outside filter, from where it can be easily be disposed of on a regular basis without disruption to the tank. Thus, the tank's natural life span is potentially far greater.

A quick reminder — additional aeration is essential in this system.

Refinements

Either of the two systems above rely basically on biological activity, with various degrees of physical removal for good measure. But there are additional ways of improving water quality, of varying usefulness, which can be considered.

The first obvious step is to consider chemical filtration. By adding highly activated carbon, or even better a Poly Filter, much of the liquid waste matter will be adsorbed far more quickly than by biological activity.

Another piece of equipment is the Protein Skimmer. This can be quite bulky, requiring a space above the water level for the collection cup. But it has come to be regarded as the second most important step in water purification in a marine tank after biological filtration. Most are simple air powered models, but larger tanks require far more powerful, and expensive, venturi type skimmers; some of these can be installed externally.

Other methods include the use of ozone and ultra-violet sterilisers, but both these expensive pieces of equipment would not normally be considered by the beginner, and their use should be preceded by further reading.

Introducing
MARINES

Setting up the Marine Aquarium

▶ Spirobranchus sp. Left hand retracted, right hand extended.

PHOTOGRAPH: M. P. & C. PIELNOIR

Reef Filtration

During the mid 1970s there was a movement towards placing the filtration outside the tank. Rather than using the tank floor for the basic filtration, various filtration methods are placed at the side or below the tank; usually water overflows into these compartments and is then pumped back into the tank. The main advantages of these systems is the ability of the aquarist to exercise far more control over the maintenance of the filters. No longer does the necessary maintenance of each piece of equipment have to be weighed against the disruption and mess it causes.

Today's reef system tanks are purpose-built aquariums either with a built in filter compartment (in smaller tanks) or with an outside box arrangement sitting below it. Both methods contain fairly large trickle filters, a protein skimmer and a denitrifying compartment. A whole culture seems to be developing in reef-keeping, but UK aquarists seems to be far more conservative in their approach to new ideas than do aquarists from the Continent and America.

Lighting and Heating

There are as many opinions on how to light a marine aquarium as there are types of lighting. Most simple systems rely on a combination of fluorescent lights, chosen from a mixture of brand names and types such as Aquastar, Triton, Coralife and many more. For a 'fish-only' tank of average depth (up to 18in), use them at a rate of 20 watts per square foot of water surface area. If there were Angels and Tangs among the fish — and thus a need for algae growth — then a rate of 30 watts per square foot is about right. For an invertebrate aquarium, a minimum of 40 watts per square foot is recommended.

Splitting the lighting into two different circuits would be advantageous. In nature, the seas do not suddenly turn from near darkness to bright light, and in an aquarium such a transition is potentially damaging. Ideally, an aquarium will first be subject to natural daylight, then half the lights will switch on a little later, these being left on for a period of 10 and 12 hours. Then in the middle of the day the full lights should come on, for maybe a

▶ Modern high intensity pendant lighting.

PHOTOGRAPH COURTESY OF IERRARD BROS

period of around six to eight hours, to replicate the mid-day sun.

Compromise is inevitable, but the more you can imitate Nature the less the chance of failure.

In most invertebrate systems, fluorescent lighting is generally not considered sufficient. This is especially true for tanks deeper than 18in and advantages and disadvantages of more powerful lighting has to be considered. The first alternative used to be spotlights, but their inefficiency has rendered them fairly obsolete. The modern alternative is, of course, the metal halide lamp. These have to be suspended over the tank, thus precluding the use of conventional hood arrangements.

Although their advantages in terms of efficiency and results far outweigh this, their expense, however, puts them beyond most beginners' considerations.

Heating is very similar to that used in freshwater systems. Use combination heater/stats at an average rate of 50 watts of heater per cubic foot of water. It is always best to divide your requirements by two and use two half-size units. Maintain a temperature of 75°F (24°C). Your thermostats should not fluctuate more than two degrees either way, in the course of four hours.

The Decor

Many aquarists prefer to decorate their tanks dry, others prefer to use the maturation period to add decoration. Many tanks are decorated with a mixture of artificial or natural (but dead) materials, while reef systems rely almost entirely on living material to provide the decor. Decisions depend on available finance, artistic temperament or choice of livestock/system, etc.

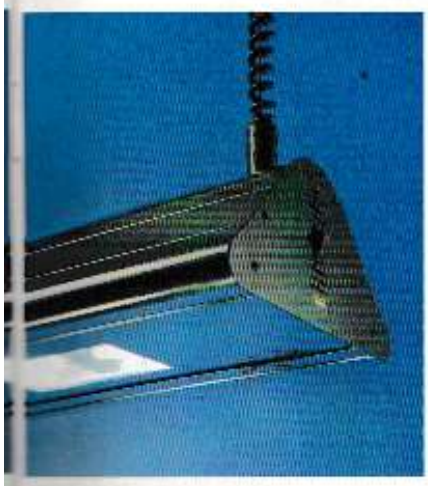
Choices include:

(a) Living Rock — natural rock taken from the reefs, usually containing hosts of embryonic marine life. Easily the most interesting and rewarding choice (which also dictates the type of tank which will follow) but it is also quite expensive which may deter many aquarists.

(b) Grotto Rock — a porous and cavernous man-made rock, which can be used on its own in 'fish-only' systems or mixed in with living rock where it can be colonised. Second-best to the real thing, but at less than half the price, it is not only the 'fish-only' aquarists who find it a boon.

◀ Fluidised bed filter.

PHOTOGRAPH COURTESY OF UNDERWORLD PRODUCTS



▼ Modern power head for undergravel filter.

PHOTOGRAPH: A&P LIBRARY

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Setting up the Marine Aquarium

(c) Natural Rocks — slate, granite, Tufa, sandstone, etc. Cheap and readily available. They are safe but displace a lot of water.

(d) Dead Corals and Shells — since they were so important as decorative items until recently, they cannot be ignored. But as their collection is so destructive to the native habitat of marine fish, it is accepted that it is environmentally unacceptable to collect (and use) them. Artificial, but very real looking, substitutes are becoming ever more available.

Getting Going

Once the tank is situated in its chosen spot (and been tested for leaks!), set up the chosen filtration system and wire all the electrics. Estimate the volume of your system — each cubic foot contains six gallons of water. Add an artificial salt mix into the tank at around 1 kilo per six gallons — use less rather than more — since it is easier to subsequently add than to take away. Do not be tempted to use natural seawater, its pollution and disease cannot be readily removed from it. Add water, leaving enough space for future decoration, and connect the electricity.

Check that the pipework is secure and not leaking. Do not worry if the tank is extremely cloudy at this stage. Leave the tank overnight to settle. Next day, check the temperature and make any adjustments as necessary. Using a hydrometer, check the salinity. A 'fish-only' tank is normally set at 1.021, a Reef tank at 1.025 and a mixed tank is somewhere in between. To increase the salinity, add more salt and check after the extra salt has had time to fully dissolve.

Maturation

Earlier the need to build up colonies of nitrifying bacteria was explained. The tank has been set up in such a way that two of the three requirements are already in place, oxygen and a foothold. The missing link, the food, will be provided by the livestock, but the tank has to be matured first. If you introduce fish into your newly set up tank, their waste product initially will pass into and pollute the water because the bacteria have not yet been introduced and become established. This will stress, and maybe lead to the death of, the initial livestock. Therefore, we must firstly establish the waste-processing plant.

There are two ways of achieving this. Either you can add tolerant and hardy animals (either fish or live rock) or you can use a chemical. If you are intending to buy live rock, this is an ideal method, even a small quantity will seed the tank. In either case, you will need to monitor conditions with a test kit.

After introducing either a fish, living rock or chemical, the ammonia reading will rise within a few days. This will reach a peak before subsiding. This is then followed by a rise in nitrite of between 10 and 20 ppm. Then it is a question of patience! Once the nitrites are cleared, the first stock can be considered. The process can be speeded up by adding matured gravel or filter media from an existing set-up. Ask your shopkeeper or a friend to help you here. Maturation periods are highly variable. Some people mature a system in as little as a week, others take over a month.

Tips — ensure that all your decor is thoroughly cleaned and have plenty of aeration — you can always reduce it later.

Summing Up

Any potential marine keeper is advised to take the following three important steps before considering the final plunge into one of the most rewarding and challenging hobby available :

(1) Read, read and read even more, suggested books are listed below.

(2) Find a good specialist marine retailer and establish a two-way relationship.

(3) Join a marine aquarist society — an invaluable source of information and advice.

Recommended Reading

The Instant Ocean Handbook (Ed Mowka) — a simple beginner's guide to follow.

The Seawater Manual (Ed Mowka) — a basic marine chemistry book.

The Interpet Guide to Marine Fishes (Dick Mills) — an informative beginner's handbook.

The Book of the Marine Aquarium (Nick Dakin) — a large format book with a good mixture of photography and information, an excellent book for beginners.

The Tropical Marine Fish Survival Manual (Gordon Kay) — a useful starter book.

The Marine Aquarium Handbook (Martin Moe) — the best of the lot.

We are indebted to Underworld Products for providing the information in this article.

Introducing MARINES

Tank Wars!

Dave Garratt looks at the thin line between war and peace in the marine aquarium

Doctors tell us that keeping pets is therapeutic, whilst fish keeping is a particularly stress-relieving hobby. I can only conclude that no medics keep marine fish!

I am sure we are all familiar with the homicidal tendencies of some of our charges. You know the scenario — you add a new fish to a serene community convinced that the peaceful status quo will continue. Suddenly, one of the residents, who until now has been peace personified, turns into the Terminator, and begins to knock the living daylights out of the newcomer. Why? I hope this article will help to shed a little light on the problems of fish compatibility and aggression.

Most tropical marine fish exhibit aggressive territorial behaviour, both in their natural habitat and within the aquarium. On the reef many species coexist as a natural community exhibiting many lifestyles, for example; predator, prey, parasitic, symbiotic. The sheer size of the reef gives the facility to flee, therefore similar species are rarely in serious combat over territory or feeding grounds. Even

◀ Leopard Moray Eel.

PHOTOGRAPH: LINDA LEWIS

Introducing MARINES

Tank Wars!

▶ The Triggerfish (*Rhinecanthus assasi*) can be aggressive and has the ability to inflict severe damage.

PHOTOGRAPH: M.-P. & C. PIEDNOIR

prey have a reasonable chance of evading their pursuing predator. This state of relatively peaceful coexistence is shattered within the close confines of the aquarium. Perhaps this should not be surprising to us if we consider that territory has suddenly become extremely limited, escape impossible, and competition for food increased.

Aggressive tendencies can be related to a number of behavioural situations and circumstances.

1. Predator/prey relationship

Predator/prey could be considered as the ultimate aggression, or as just a natural feeding mechanism; however, whichever way you interpret it, the outcome is not affected.

It is the most obvious type of aggression and must also be the easiest to cure. An experienced aquarist should have sufficient knowledge about intended purchases to ensure mishaps to not occur.

However, we all make mistakes. The fatal mistake in this instance is underestimating the size of the predator's mouth. Some predators can easily swallow fish half their own

▶ The Sailfin Tang (*Zebrasoma flavescens*) can be persistent and surprisingly vicious bullies.

PHOTOGRAPH: M.-P. & C. PIEDNOIR

size while some of the Anglerfish, Frogfish and Toadfish, can swallow prey virtually as big as themselves!

Size is the key factor as many of the predators often kept by the hobbyist eg, Lionfish, Groupers, Moray eels, Snappers, take their food in one gulp. Hence larger fish are safe but anything small enough to be swallowed, will be! If at all in doubt, do not take the chance.

2. Mate/spawn protection

Intense aggression will be directed at any fish, regardless of species, that ventures too close to the spawning site of a pair of fish. In the aquarium such behaviour will be exhibited by species that prepare spawning sites, in particular those species that spawn in fairly exposed locations. For most aquarists the species in question would be Damsels and Clownfish. The area around the spawn site is protected but as the attendant fish do not tend to stray far, this type of aggression is not usually a major problem.

Certain fish available to the hobby can be found as mated pairs, in particular Dwarf Angels, Gobies, Clownfish and Damsels. Once established as a true pair they will rarely tolerate another fish of their own, or of a similar species. Again this is a fairly simple problem to deal with — do not add a third individual of the species.

3. Feeding frenzy

Some fish can be, to put it mildly, over-boisterous at feeding times. I would obviously put Puffers and Triggerfish into this category. Less obvious candidates include some of the lightning-fast feeders of the Wrasse family, here the sheer turmoil caused by their speed can be too much for more retiring species. Other fish, perhaps slower or more shy and retiring, can get caught up in feeding time melees and suffer badly nipped fins or more serious bites. Other fish may be too timid and retreat from the frenzy, hence they do not feed. Careful stocking of the aquarium, to ensure robust 'bruisers' are not kept with 'shrinking violets', should eliminate the problem.

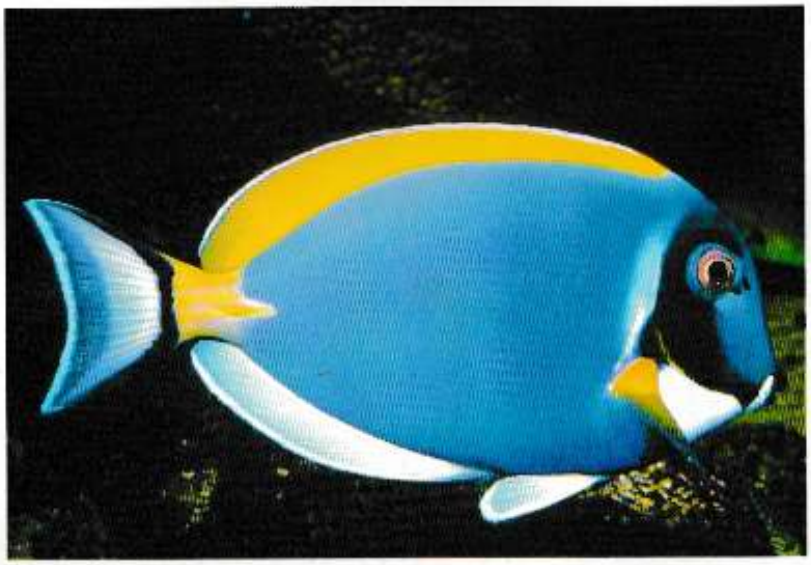
4. Growth and sexual maturity

Aggressive behaviour can suddenly occur in previously peaceful, established tanks that have had no recent livestock additions. There are two possible explanations: reaching sexual maturity, or an attempt to expand territory by a rapidly growing fish. The prime example that springs to mind are Angelfish. Aggression that has suddenly occurred in a previously peaceful tank is unlikely to have an easy solution and may require the ultimate sanction of the removal of the aggressor.

5. Territorial dominance

Probably one of the biggest headaches (including all marine problems not just compatibility ones) for the marine aquarist to contend with. It is a source of much anxiety, stress and despair and the reason for my opening thoughts about the opinions of medics.

Most coral reef fish exhibit territorial behaviour. In its natural habitat a fish will viciously defend its adopted territory, be it a small cave, a coral head or a Sea anemone. The territorial boundaries defended will generally be related to the size of the fish with larger fish defending larger territories. This staunch defence of the territory safeguards the fish's shelter, spawn site and food supply.



▼ The Powder Blue Surgeon (*Acanthurus leucosternon*).

PHOTOGRAPH: M.-P. & C. PIEDNOIR

Introducing MARINES

Tank Wars!

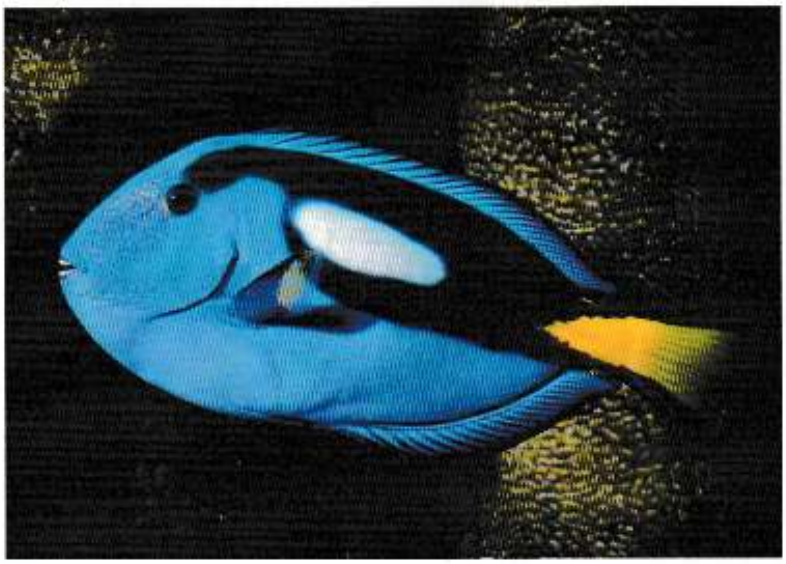
A number of factors can dilute this aggression on the reef. Fish will often happily share a territory with a completely different species as they will not be in direct competition. Adult fish will often tolerate juveniles of their own species, again because there would be no direct competition.

Dilution of aggression can be seen at an extreme in dealers' tanks. Here, so many identical or similar species are packed into a single tank that an individual cannot become dominant.

Territorial aggression is heightened in captivity, being at its worst between fish of the same species, of a similar species, of a similar shape and size or between fish of similar body patterns and colours. If a fish becomes dominant in a tank and considers most of, or even the whole of, the tank to be its territory, and a similar fish is added, I can guarantee the sparks will fly. Within the confined space evasive action for the weaker fish will be impossible. The loser will either suffer serious physical damage or more

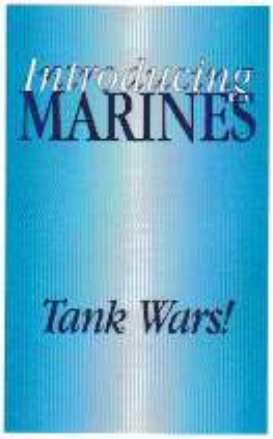
▶ *Tetraodon fluviatilis.*

PHOTOGRAPH: M.-P. & C. PIEDNOIR



▶ *Paracanthurus hepatus.*

PHOTOGRAPH: M.-P. & C. PIEDNOIR



insidiously it will be banished to a recess of the tank, from which it will not be allowed to wander and feed.

Coping with aggressive behaviour

Careful attention to detail when stocking an aquarium will avoid most incompatibility problems and it will certainly cope with the predator/prey and feeding frenzy issues. In a reasonably sized tank, mate and spawn protection should not be a problem, unless you upset the marital bliss by adding a third member of the species.

The problems of territorial aggression, and increasing belligerence, with age or maturity, cannot be easily solved. Again careful stocking will greatly reduce the risks, but unexpected clashes do occur, after all we are dealing with the idiosyncrasies of biology.

Territorial aggression is at its worst when a new fish is added to an established community of fish. The aquarist has to accept the risk of problems with certain species, notably Triggers, Angels and Surgeons.

The persistence of the aggression, and extent of the damage these species can inflict, should not be underestimated, to do so will almost certainly lead to the demise of the unlucky loser.

Attempting to tame the bully

Sometimes certain measures may succeed in diluting the aggression directed towards a newcomer to the tank. Some authors would recommend maintaining complete darkness in the tank for 48 hours by draping it with a heavy blanket. Hopefully during this period of enforced slumber the newcomer will be readily accepted — but do not bet on it! The next step is the use of a clear plastic divider placed within the tank for up to two weeks, to separate the dominant bully from the new addition. A further step is to remove the aggressor to another tank for a couple of weeks, in the hope of allowing the new fish to settle into the main tank. The theory is that on its return to the main tank the bully will be disorientated and will be too busy re-establishing itself to worry about the newcomer. The down side of this approach is the stress it could place on the bully, indeed in the case of a large Angel it could permanently disrupt its feeding pattern and plunge it into a state of slow decline. The ultimate answer is that the bully, or the new addition, has to go.

Rogue's Gallery

Finally, I would like to suggest a number of fish that are especially likely to exhibit marked territorial aggression towards fish similar to themselves.

Large Angels are particularly intolerant of their own species while some such as the Queen Angel (*Holacanthus ciliaris*) can be aggressive towards just about anything.

Triggerfish are aggressive and have the capability to inflict severe damage, be especially aware of Queen (*Balistes vetula*), Undulate (*Balistapus undulatus*), Clown (*Balistoides conspicillum*), Picasso (*Rhinecanthus aculeatus*) and Bursa (*Balistes bursa*) Triggerfish.

Surgeons can be persistent and surprisingly viscous bullies, particularly the Powder Blue (*Acanthurus leucosternon*), Powder Brown, or Gold-rimmed (*Acanthurus glaucopareius*) and the Sailfin Tang (*Zebrasomas veliferum*).

Closing Notes

It is a sensible precaution to make any fish with a suspect reputation the last addition to your tank.

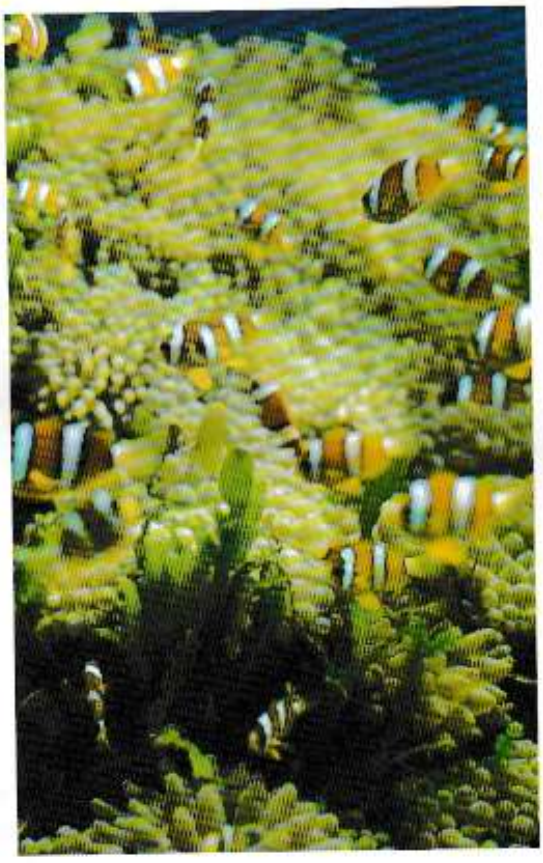
However, as I mentioned earlier, we are dealing with the idiosyncrasies of biology and fish are notorious for not reading aquarium reference texts! The unexpected must always be guarded against and careful observation is essential. New additions must be closely observed over a period of a few days to ensure all is well. I give a few examples below that illustrate cases of unexpected problems.

I have watched in disbelief as a 3in Bi-color Blenny, in a 150 gallon tank, terrorised a juvenile Clown Trigger, despite the Trigger's formidable set of teeth. I have seen two 1in Neon Gobies decide a 6x2x2ft tank was not big enough for both of them, and one was killed in the ensuing fight. I have witnessed a 3in Clown Trigger take over a tank within 30 minutes of being introduced into a fully-stocked 120 gallon tank of large fish. It then became impossible to add any further stock due to the almost psychopathic aggression of this newcomer.

Introducing MARINES

Send in the

Martin Apps says the first ten years are the worst



▶ An ideal first fish in a marine aquarium is the Clownfish.

PHOTOGRAPH: A&P LIBRARY

They said it was difficult, but I thought it worth the effort and in August last year I sat down in front of one of my fish tanks with a glass of wine and a piece of birthday cake. For me it was a celebration of ten years of marine fishkeeping — for the four fish in the tank it was to celebrate ten long years looking out at me and my family.

I started fishkeeping the same way as most people, with a community tank in the lounge. It was restful, it was tranquil, it was undemanding. Five heavenly years while the children grew in size and my collection of freshwater tanks grew in number I was content. But frequent visits to fish shops bring you into contact with other things like marine fish. They were so bright, so vivid, and those anemones were so interesting. I soon had an overwhelming desire to have some.

Up to the minute advice

First I decided to research the subject. Up to the minute advice from a fishkeeping magazine was needed. Yes, lots of information here but it does seem a bit 'technical'. More reading, 'not too difficult but expensive'. Next article, 'can be set up at a reasonable price but the fish are relatively short lived'. Well, perhaps marines could wait after all.

It was just about then that when poking through one of those tatty cardboard boxes you

Marines

sometimes find in fish shops full of old test kits, broken sunken galleons and plastic plants out of their wrappings that I found it, an air-operated protein skimmer. My reading had told me that this was a invaluable piece of equipment and here it was at a fraction of its true price. I carried my trophy home jubilantly. My wife I must say was less impressed with a clear plastic tube with an air stone at the bottom. I stored it away carefully as my first step towards marine keeping.

We moved house soon after this and my time was taken up with transporting and settling the furniture, the family and my fish tanks into their new home. My protein skimmer sat on the shelf in my new fish room daring me to get on with a marine tank. So in July of 1985 I started with a list of everything I needed.

Basic requirements

A tank, not too small, as I'd read these were difficult to keep the environment stable, not too big, it had to fit in the lounge and I wanted to keep my marriage intact! Perhaps a 48x18x18in would do the trick? A filter system, twin undergravel filters fitted with power heads. The filter bed, 1½in of 'calcium plus', then a gravel tidy and a final layer of two inches of coral sand. Heaters: For peace of mind two combined heater/stats. Lights. Protein skimmer. Cable tidy ,small but essential. Tank decor — Tufa rock or coralcic must Look as natural as possible. Test kits.

I bought the tank with sliding cover glasses first and built it into my own cabinet. This done I installed the undergravel plates covering them with the calcium plus. A chance encounter at my new fish shop with a chap from the same village who was giving up marines nearly led to my first disaster. He offered me his old coral sand. After lugging it all the way from his house to mine the truth dawned on me that if he had had no success with marines then the sand could be full of disease and worse — copper medication. As I was hoping to keep invertebrates I knew the slightest trace of copper could prove fatal.

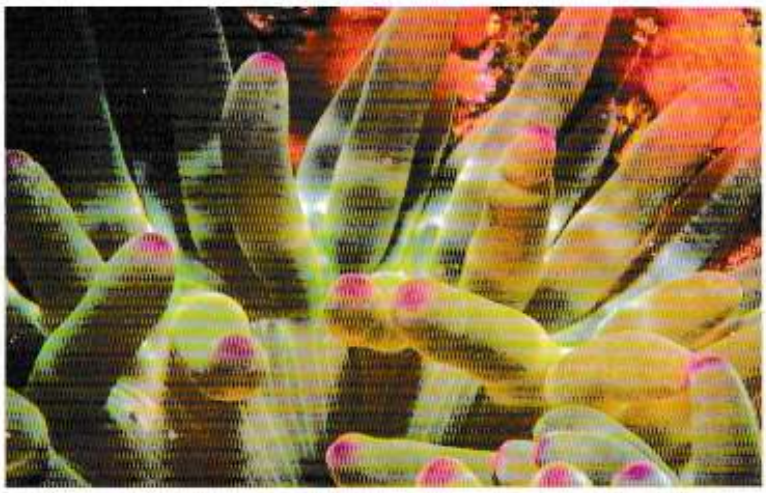
I dumped the lot and spread two inches of new washed sand across my filter bed. I installed two Eheim power-heads on the uplifts of the u/g filter, one at the full height of the uplift and the other low down in the tank to create good water circulation throughout the whole tank. Next I put the heaters into the tank and wired them along with the power-heads back to the cable tidy.

Choice of lighting

Lighting was my next priority. As I was intending to keep a mixed tank of fish and invertebrates a powerful light was needed. I decided on a combination of a fluorescent Northlight tubs and a 90 watt Mercury lamp, the latter being the most expensive item of the whole set-up but well worth the investment for its cheapness to run and fantastic light output. The lights were wired back to a time switch salvaged from a central heating system. I was determined to give the tank a constant day length as I was sure this was one of the secrets of success. This was set to give a 12 hour day.

In went my prized protein skimmer but alas it was too tall to fit below the cover-glasses! A nifty bit of glass cutting was needed to reduce the length of this cover glasses and build a movable glass box at one end to accommodate its height. One last trip out to a Garden Centre provided me with enough Tufa rock to give my tank a look resembling the Grand Canyon.

By now it was July and I just managed to fill up with saltwater and start the whole system going before leaving for the annual fortnight's holiday. As soon as we got back I set to work testing the water — pH 7.8, salinity 1.021 temperature 75°F — all seemed well.



▼ The Anemone *Cribinopsis crassa* makes a welcome addition.

PHOTOGRAPH: M-P. & C. PIENOIR

Introducing MARINES

Send in the Marines

The time had come to buy my first marine fish. Well I know it's supposed to be a nitrate-tolerant Damsel fish but that's not what I wanted. I bought a small Percula Clown Fish, reasoning that one small fish swimming in one large highly-filtered tank couldn't overload the system. All went well and for a month I monitored the Nitrite level closely without ever getting a positive reading. September saw me at the fish shop again and another Clown Fish was added to the tank.

Quarantine the answer

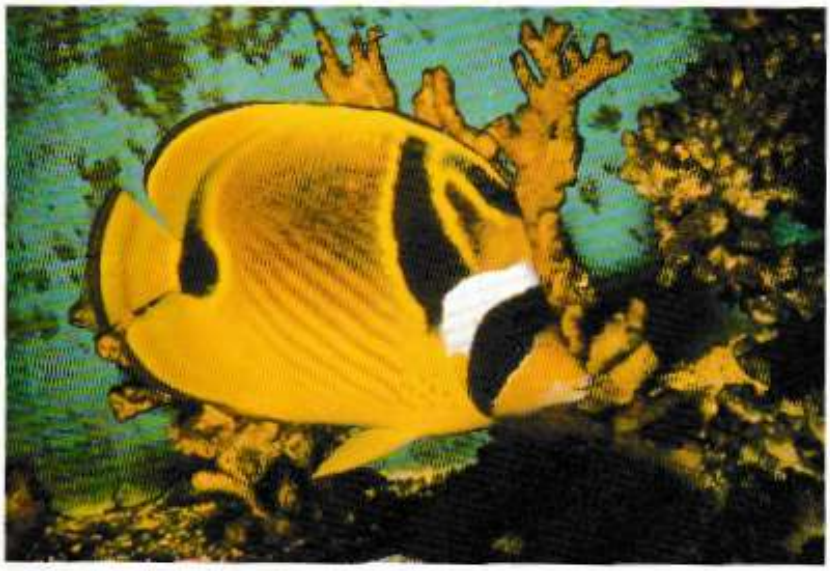
It was about now that I realised I was playing with fire. Suppose one of the fish went down with some dreaded disease or parasite? The cure for many of these would be copper-based. If I put copper in the tank then bang would go my chance of putting in my beloved invertebrates. Quarantine was the only answer. I set up a smaller tank along the same lines (minus the lighting) in my fish room and from then on no fish went into my main tank without first spending a month in the quarantine tank.

In October I added a Yellow Tang and in November in went a Regal Tang. My marine fishkeeping had started in earnest. These are the four fish that have been with me now for ten years.

Of course I've had others that didn't live as long. A beautiful Banner Fish seven years; a Blue Trigger five years; a Blue Wrasse four years; two Cleaner Wrasses three years each; and a Lunula Butterfly 18 months.

Maintenance for the tank has followed almost the same routine for those ten years. Weekly I empty the protein skimmer, test the pH and the salinity topping up with fresh water if needed. I must admit I dropped the nitrate test after the first few years as I had never seen a positive reading. Every two weeks I clean the glass of algae and run my fingers as deeply as possible through the coral sand to stop it compacting. Once a month I do a 15 per cent water change. Over the years I have had to replace some of the hardware. I'm on my third Mercury bulb, fluorescent lamps have come and gone as have heater/stats but I'm still on my original power-heads and, of course, my cheap protein skimmer is still going. What an amazing bit of luck it was that I picked it up out of the bargain box all those years ago!

As well as the fish there were also the invertebrates. After my initial four fish were settled in Christmas came round and what better present to buy myself than the longed-for Anemone? The water quality was stable with not a trace of nitrite. For my purchase I chose a shop that specialised in marines theorising that water from a tank of mixed fish and invertebrates could have disease in it. With modern day centralised systems using UV sterilisation this is no longer the case.



▼ The Butterfly Fish (*Chaetodon lunula*).

PHOTOGRAPH: M.P. & C. PIEDNOIR

Impressed

I soon found the specimen I was looking for, 6in across with pink-tipped tentacles. I asked to purchase it and that was when the owner of the shop started his cross-examination. "What's the pH of your tank? What's the salinity? What temperature are you running? What water changes are you doing?" I obviously answered all these questions to his satisfaction as he bagged up my Anemone ready for transport home. Some people would have been offended by his manner but I was most impressed at his care over his stock.

Introducing MARINES

Send in the Marines

and went back many times to his shop.

My Anemone was soon installed with the two Clown Fish always in attendance. It also gave the family hours of fun as for many months it refused to settle in one place and roamed the rocks and tank sides whilst I moved lights, rocks and water currents around in an attempt to make it happy. Eventually I gave up, presuming all the books saying Anemones are mainly sedentary animals must be wrong. But after about a year it settled to one place underneath the mercury light only making occasional forays around the tank. On a diet of Lancefish three times a week it grew larger and lived for five years.

My second Anemone was purchased in completely the wrong way. I'd been visiting one shop fairly regularly to buy freshwater fish. The owner was dabbling in marine fish and had stocked a 6in brilliant white Anemone. Presumably he had thought it would sell quickly as he had neither the filtration system or lighting to maintain it in good condition for any length of time. I watched it on every visit getting smaller and smaller and sadder and sadder.

Rescue attempt

Eventually the owner, knowing I kept marines, offered me the poor thing at a 'bargain price'. I knew in my heart it was not the right way to buy livestock but couldn't resist trying to rescue it. Home it went with me to be carefully inserted into a crevice right under the mercury light. I hoped that some of the symbiotic algae that live within the tentacles was still alive. The following morning it spread itself out to about 2in across and seemed to relish the mock sunlight like a German on a sunbed. I waited several days before I tried to feed it. Tempting as it was to get some food into it I didn't want to risk giving it food that it could not digest as I wondered if it might just stay inside it and go bad.

After a week of watching it looking better every day I started feeding with very small peace of Lancefish every other day. It soon started to thrive and grow and eventually reached 8in across.

It was at this time I lost my original Anemone and my Clown Fish soon made for the new one spending countless hours luxuriating in its caress. It lived for about four years and never once moved from that crevice!

As soon as I was set up with my tank of marines my seven year old daughter decided she wanted a fish to go in my tank. Taking her to my local fish shop I waited in trepidation on what she might decide she wanted — the chances of it being either suitable for my tank or in my price range I thought were thin indeed! She watched fascinated as Queen Angelfish swam by. She laughed to see Polka-Dot Pantherfish dance by. She drew back in fear at the sight of a Lionfish and then she pointed to the bottom of one tank. "I want two of those," she said. Side-stepping across the sandy floor were two Hermit Crabs encased in their beautiful shells. Well, why not? I was all set up for invertebrates so home they came.

Making a meal

George and Georgina as they were christened soon settled in, eating Lancefish and more lettuce than I thought possible. Everything went well with them for several months until we came down one morning to find all the fish in the tank apparently making a meal of one of them. My daughter was very upset and took a lot of comforting before going off to school.

▼ The Wimple Fish.

PHOTOGRAPH: GORDON WIGENS

However, on her return one look in the tank showed a very healthy George and Georgina. No-one had prepared me for invertebrates with exoskeletons and have to shed their outer skeleton in order to grow. This soon became a regular event: one of the Crabs would go missing for a couple of days behind the rocks and re-emerge sporting a new set of legs. Nature being a waster of nothing, the fish usually consume the old set, although over the years the bottom of the tank has become littered with cast-off limbs.

Of course, after two or three years the inevitable did happen. As it always seems to, to young children's treasured pets, one day George did not reappear. A quick look around the rocks soon revealed a deceased Crab. Full of dismay at the thought of my small daughter's anguish I rushed off to the fish shop to buy George 2. I should have known better! What seemed like an identical Hermit Crab (after all, don't they all look the same?) didn't fool my daughter for one moment and although consoled by the new one went into mourning for a week over the loss of poor George. Georgina lived on for another two years before joining him in Hermit Crab Heaven.

Expect some disasters

George 2 is still keeping the visitors amused as although they always "ooh" and "ah" over the fish in the tank it's always the constant acrobatics of the Crab that holds their attention when you're trying to talk to them.

It hasn't all been plain sailing over the course of ten years; I had some disasters. Soon after getting the tank going I added some plant life, Caleurpa, one of the higher algae. This did very well, growing fast under the high level lighting, converting all those nitrates into a carpet of green. It did so well I even harvested some to barter at my local fish shop. Fed on copious amounts of lettuce my two Tangs and two Hermit Crabs found the Caleurpa completely distasteful. That is, until we went away for ten days. I had previously left them quite happily for a week without any ill effect but ten days was just too long — they devoured every scrap of the Caleurpa. I have attempted to re-introduce it several times but it always ends up as an expensive snack, so now my tank remains devoid of any green colour which I find most annoying. My livestock disasters include introducing a Dancing Shrimp into the tank with a Blue Wrasse in it. I was sure the Wrasse was too small to tackle a Shrimp — how wrong I was — another expensive snack, I'm afraid!

Filtration was the problem

Living in the south of England the Great Storm of '87 gave me problems with the electricity supply being off for three days. Having a gas fire in the lounge I managed to keep the temperature up reasonably well. So what if the family had to sit in shorts and tee shirts! Filtration was the problem: no power-heads for the undergravel filter and no air for the protein skimmer. I stopped feeding at once and hoped for the best. When the power came back on I still did not feed the tank for a further three days until I thought the bacteria in the filter were active again. This approach seemed to work well for the fish but not for a Tiger Cowrie I had bought two months before. The poor water quality had been its downfall.

Secrets of success

Ten years is a long time to keep a tankful of Marines going. My secrets of success are:

1. I quarantined all stock before putting them in the tank.
2. I stick to the routine maintenance scheme.
3. I never overstock the tank, keeping to the level of fish my filter can cope with.
4. I try not to overfeed the inhabitants.
5. I always wash my hands in plain water before putting them in the tank; you never know what detergent or polish you may have on them.

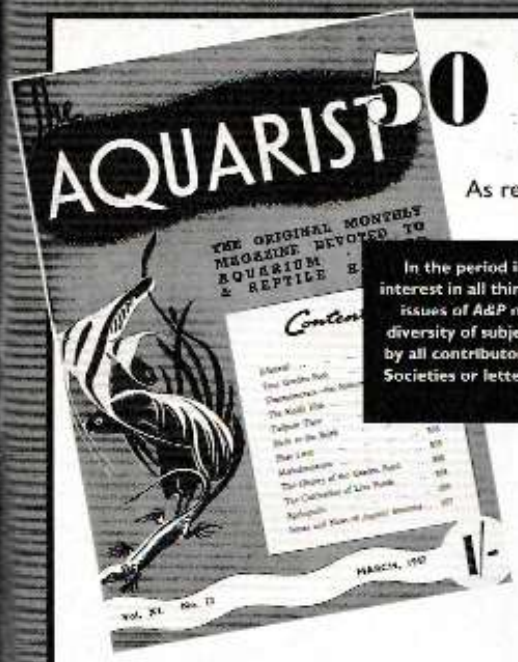
After all this time I still get a thrill out of seeing the occupants of my tank enjoying 'life on the reef', even if they are all old aged pensioners!

▼ The Hermit Crab.

PHOTOGRAPH: LINDA LEWIS

50 Years Ago ...

As recounted by Editor **Dick Mills**



In the period immediately after the war the increase of interest in all things aquatic was rapid. Looking through past issues of A&P makes interesting reading not only for the diversity of subjects raised but for the apparent enthusiasm by all contributors whether they be authors, reporters from Societies or letters from readers. August 1947 threw up this selection of topics ...

With today's 'taken-for-granted' reliance by the aquarist on well produced and widely available foods of all descriptions, tastes and formats it was rather humbling to see that way back in 1947 many aquarists regarded breeding of tropicals a spring and summer occupation when natural live foods were readily available.
R. J. Whitwell had the temerity to attempt to breed (and write about the successful experiences) Zebra Danios, Blue Gouramis and Angelfish. Whilst culturing infusoria via the rotting down hay in water method worked well for the first two, the writer managed to feed his young Angels with rotifers living in pond water which he had brought (with admirable foresight) into a tank in his shed to survive the frosts. How things have changed!

The hardships continued with the problems of a would-be aquarist serving in the Regular Army — with a sudden 24 hours notice of a posting how would you cope with moving your aquarium? A. V. Heggie also nurtured a dream of keeping Guppies (brought on by a report in the national press) and would have attended a Society but it was too far away at 50 miles. Eventually a small (18x10x10in) tank was obtained, filled with a mixture of leaf mould and builder's sand for substrate, *Elodea*, from the local river and furnished with a striplight (still no fish). After a trip to London two small Shubunkins were to be the first inhabitants and these were left floating in their can in the tank for 24 hours to equalise the water temperatures. And guess what? Complete success and their luxury was further made complete by the addition of an aerator — but no Guppies yet!

A study on the relationship between oxygen content of water and haemoglobin levels in the blood of *Daphnia* was undertaken by Professor H. Munro Fox of Bedford College, London who appealed to hobbyists for locations of good *Daphnia* ponds. (In a later Society News report it seems, according to the Northampton & District Society, that the town of Northampton and its environs was very well supplied in this respect).

The President of the Bristol Aquarists Society, Mr Harry Amos, passed away aged 63. He was a member of the Committee who set the 'Bristol Standard' and owned 'Bessie' a famous parent Shubunkin, perhaps one of the best known individual fishes of its time.

The balanced aquarium subject was given a new twist by C. C. Taylor (Editor of the Dominion Aquarist & Pondkeeper in New Zealand) who advocated doing away with traditional plants and relying on ... algae, which was grown on 4-6in rocks placed in the aquarium.

The Scottish Annual Show was to be held on November 13-15 at which no less than 509 fish housed in 160 tanks on 180ft of staging were expected along with ... 30,000 people over the three days of the event. The entire judging was undertaken by Arthur Derham, founder of *A&P*.

A proposed new specialist Society for Cold Water Fish was proposed by one Captain L. C. Betts.

Not for the squeamish was the demonstration given by Mr Dawson, a member of the Bournemouth Aquarist Club, of cutting up a number of garden worms for fish food; he had at last found a miniature mincing machine!

Ilford Aquarists Society's collective consensus of success for raising Gourami fry was to provide one gallon of infusoria per day for ten days and to separate out the rapid growers to give the smaller ones more chance of obtaining food. Losses due to lack of towels covering the tank were dismissed in favour of fry starvation.

Dave Garratt emphasises the importance of regular maintenance

PHOTOGRAPHS BY A&P LIBRARY

Maintaining Water Quality

Water quality is everything in the marine aquarium.

Regular maintenance is an essential part of maintaining your aquarium, and consequently your livestock, in peak condition.

Maintenance, I hear you groan, yes I agree it is one of the most boring topics in the hobby, perhaps only surpassed by endless discussions as to the relative merits of differing filtration systems. Still someone has to write about it and I drew the short straw, Nick always gets the interesting stuff (only joking Nick — honest!)

Joking apart, regular maintenance is an essential part of maintaining your aquarium, and consequently your livestock, in peak condition. Many of the things that follow will have been ignored at times to varying degrees. The match on the box looks a far better prospect than the water change that can always be done next week — somehow it gets left altogether. Motivation to carry out these chores can be particularly low if the tank is not progressing as it should — but this is the very time to ensure you carry it out religiously. I am no better than the next guy, probably worse, although I now realise the time saved by not doing maintenance will be lost many times over in the future. OK — end of lecture, start of article.

THE NATURAL HABITAT

The coral reef, although a fragile environment very prone to man's meddling, is also one of nature's most stable ecosystems. The creatures of the coral reef are dependant

on this stability and are unaccustomed to major changes.

Marine fish are in a constant state of flux with their environment. Seawater has a higher concentration of salt and minerals than the body fluid of marine fish. Therefore, by a process known as osmosis there is a constant movement of water from the tissues of the fish to the surrounding water. The marine fish solves the potential dehydration problem by drinking large volumes of sea water. Only a little of the excess salt they take in from the water is absorbed, the rest is excreted via specialist cells within the gills. Marine fish also need to take in large amounts of water so as to extract vital, life-giving oxygen from it, via their gills. When considering these factors the need to provide ideal conditions, via first class water quality and stability, becomes apparent.

Marine aquarium maintenance is not as arduous a task as many imagine. It relies on common sense, plus a sound understanding of marine aquarium basics and biological filtration.

THE WATER CHANGE

Filtration, however efficient, cannot degrade all of the waste products generated by a marine aquarium. Therefore, they accumulate in the aquarium water. Nitrate is the end product of most filtration systems (unless a denitrifying filter is present) and this also accumulates.

The acidic nature of the waste products of fish and the bacterial action of the filter bed have a tendency to lower pH, therefore, a gradually-falling pH being a feature of many established aquaria.

Certain trace elements are considered vital to the well-being of fish and invertebrates. These elements are constantly being absorbed from the water, and their level depleted, by the livestock and algae in the aquarium.

The simple process of regular partial water changes is the answer to the problems outlined above.

Virtually everyone now agrees that frequent small water changes are preferable to larger monthly ones. The usual suggestion is 5 per cent per week as opposed to 20-25 per cent per month. I am sure most hobbyists will agree that the smaller, regular, option is a much easier regime to follow. If we take a common-size aquarium, of say 40-60 gallons, then 5 per cent per week only represents 2-3 gallons, whilst 20-25 per cent a month represents 8-12 gallons. The smaller amount is much quicker to change, less stressful for the tank inhabitants, easier to carry and does less damage if spilt over the carpet! It may sound a drag to change water every week but believe me the smaller the volumes the infinitely easier the task.

At the same time as the water change carry out any other maintenance, eg, change airstones and harvest excess algae. This reduces the amount of disturbance to your livestock by lessening the number of times you have your hands in the tank.

Power filters and aeration can create swirling currents to keep invertebrate life free of detritus.

BIOLOGICAL FILTER MAINTENANCE

All biological filters will require maintenance to keep their bacterial population thriving at a maximum level. The type of maintenance will depend on the filtration used; different types are quickly summarised below:

a. Undergravel

It is essential to ensure the sand bed does not become impacted with detritus. This is done by gently raking the top one inch of the bed to release accumulated debris. The debris is allowed to settle and is then siphoned off the surface of the sand during a water change.

b. Reverse-Flow Undergravel

The bed has much less of a tendency to compact as water is circulated upwards through the bed. However, efficient mechanical prefiltration of the water is essential to ensure particulate waste is not pumped under the filter bed.

In both types of undergravel filtration the sand particles gradually become coated with an inert mulm, the product of bacterial waste and dead bacteria. The particles then become less able to support the bacterial colony and efficiency decreases. To prevent this occurrence part of the top layer of the coral sand forming the filter bed should be replaced on a regular basis. I would suggest a major overhaul on the bed on a twice-yearly basis when part of the top one inch layer of the sand could be replaced. Start from one end of the tank and move down the tank replacing approximately 25 per cent of its length every six months. The bed is thus renewed in its entirety over a two year period.

c. Tunze

Tunze granules suffer the same mulm build up as undergravel coral sand and the same need for replacement applies, ie, 5 per cent replacement of the granules every six months. Tunze also needs regular attention to keep its mechanical filters at maximum efficiency, they require very regular cleaning.

Internal pipework seems to suffer from a similar build up of debris,

causing a fall off in throughput, they will need cleaning at least twice a year. The thrust bearing on the impeller will probably need replacing annually.

d. 'Advanced' Filtration

There are many types of trickle (or wet and dry) filtration systems on the market. Reef tank aquarists often use such filtration and I am sure they are much better informed than myself as to the maintenance needs of their own systems.

Moving sand filtration (fluidised bed filters) is very new to the UK market and I have not seen any in action for long enough to form any ideas on maintenance. I am sure as they become more regularly used their own individual requirements will begin to surface.

MONITORING MAJOR WATER PARAMETERS

a. Specific Gravity

Marine aquaria lose water constantly through evaporation. However, only the water evaporates leaving the salt behind, hence the salinity increases. Reef tank aquarists who keep delicate invertebrates will often use a constant monitoring and top up device to ensure a very stable specific gravity. For other tanks it is not necessary to go to such lengths provided the tank is topped up on a regular basis, at least weekly. The key is to keep your Specific Gravity (SG) stable. The range can be fairly wide, between 1.020 to 1.025 but once you have set your level you should endeavour to keep it within one point, eg. 1.022-1.023.

b. pH

We have already mentioned how the natural tendency of a marine tank is towards a falling pH. This tendency will be more pronounced in a poorly-maintained aquarium. Overfeeding, overstocking and insufficient water changes, will all add to this effect. Sea water has a pH of 8.3 and the aquarium range should be between 8.2 to 8.4. This may seem a restrictive range but bear in mind pH is a logarithmic scale and, therefore, a pH of 7.0 is 10 times more acidic than pH 8.0. The minerals in salt water provide a buffering system to neutralise the tendency towards acidity (ie, a lowering of pH). In the confines of a tank this buffering capacity can be exhausted. Water changes will usually be sufficient, in a fish only tank, to maintain buffering capacity, if not buffering solutions are available commercially. The subject of buffering capacity is more complex within a reef aquarium of demanding corals and as such is beyond the scope of this article.

c. Other Water Tests

Again the testing of basic fish only set-ups is much less of a chore than that required for a tank full of delicate invertebrates. The main parameters requiring monitoring will be specific gravity, temperature, pH and nitrates. Nitrite, alkalinity, and ammonia should be added to this list for newly established tanks, or at times of problems and uncertainty.

TAP WATER

Two of the items covered so far, water changes and evaporation top-up, both rely on tap water.

Unfortunately, in some areas of the UK the aquarist can be adding significant quantities of nitrate with the tap water. There are a number of manufacturers who produce nitrate removal resins for tap water. If on testing your tap water is high in nitrate one of these units would be a wise purchase.

Some resins will also remove phosphates and hence contribute to keeping nuisance algae at bay.

There are a number of other points to bear in mind when using tap water. It will have to be treated with a dechlorinator or left to aerate vigorously for at least 48 hours before use. It is wise to keep a wary eye on the local news to ensure your local water company are not planning any seasonal water treatments, these would be lethal to all livestock. Finally, the aquarist must ensure that any containers used for holding water confirm to standards that ensure a non toxic nature.

ESSENTIAL AIDS TO WATER QUALITY

a. Protein Skimming

Regardless of the type of aquarium being maintained the use of efficient protein skimming is essential. The merits of ultra-violet and ozone will long be debated, however the skimmer is not really an issue for discussion, it is a must. Skimmers remove organic waste from the aquarium before it can become an added load placed upon the filter bed. Basic skimmers are air-pump operated, whilst more powerful ones are powered venturi skimmers. Efficiency is governed by the size and number of air bubbles produced and by the length of time the bubbles are in contact with the water. Anything that hampers bubble production, such as a build up of fat deposits on the skimmer column or a partially blocked air-stone, will seriously impair efficiency. Therefore skimmers, like any other piece of equipment need regular maintenance and cleaning.

b. Water Treatments

I am now referring to treatments for the water in the tank as opposed to the pre-treatment of tap water. Reef aquarists have access to many treatments to remove unwanted chemical build-ups within their tanks, nitrate, phosphate and silicate removers spring to mind. However, there are less specific, general purpose resins that will remove inorganic substances that the biological filter cannot handle. The two most well known treatments are activated carbon and the adsorbent resin mat that goes by the commercial name of 'polyfilter'. Both are useful additions to the aquarist's armoury of water quality aids. Ensure you only use a high grade carbon that is manufactured specifically for marine tanks. Change the carbon on a regular basis and replace polyfilters according to their instructions.

A FEW BASIC REMINDERS

A few reminders of simple common sense rules that are probably so simple they can easily be overlooked:

Wash hands thoroughly, but not with soap or disinfectant, before placing them in the tank; Keep equipment clean, especially nets and tubing etc.; Avoid coloured, or any other suspect and possible toxic plastic containers, for water changes; Avoid all toxic fumes in the vicinity of the tank, eg, furniture polish and cigarettes; Use tight fitting cover glasses; Limit the amount of tinkering within the tank, in other words keep your hands out unless essential work is required; Avoid sudden shocks to the livestock, eg, photo-shock or child-induced shocks; Carry out a daily visual check on the tank; Check on the behaviour, apparent health and number of your livestock; Check the operation of filters, skimmer, power-heads, heaters and air-stones; Remove large pieces of detritus such as uneaten food or dead fish!

FROGS & Friends

By BOB and VAL DAVIES

HERP FACT FILE

EGG BINDING

Fused eggs from a female Panther chameleon. On this occasion they were passed out successfully.
PHOTO: BOB & VAL DAVIES

This phenomenon, properly known as dystocia, can occur in captive reptiles for a number of reasons which are not always clear. It tends to be more common in some species than in others and needs expert attention. In our collection we have experienced it with Chameleons and Collared Lizards (*Crotaphytus collaris*). With the latter lack of a suitable oviposition site was thought to be the cause.

Many reptiles bury their eggs, usually where there is some degree of moisture, suitable sites can include an area of damp substrate or a box containing similar material or damp vermiculite (the latter favoured by many snakes and small lizards such as Fat-tailed geckos). The site may be rejected if moisture content or temperature are unsuitable, it may be of insufficient depth and area or may lack privacy.

In chameleons it has occurred in females which have developed unfertilised eggs when unmated — in only one case (*C. verrucosus*) did the female manage to pass the eggs. Female reptiles of other species can and often do pass unfertilised eggs without trouble. Where fertilised eggs were retained other factors were involved — in once case the female often produced distorted eggs, sometimes two or three eggs which were fused longitudinally. Other causes of dystocia include overlarge or misshapen eggs, if oviposition is delayed the eggs can receive additional layers of calcium. Obstructive dystocia is usually due to a blockage (such as stones, etc), impacted in the cloacal passage — when this occurs surgery (Caesarian section) is necessary but the smaller the animal the more difficult this is. A few years ago one of our female Panther chameleons (*C. pardalis*) was given a Caesarian section to remove nine eggs, the other 23 having been deposited normally. The following day she was feeding normally and continued to produce several more clutches without any problems. Where no blockage is presented injections of oxytocin are sometimes effective in inducing egg-laying — it is normally used on mammals to induce parturition. Reports on the effectiveness of this treatment vary.

Egg retention is a distressing condition, for the animal AND the owner. Prevention is better than cure. Incorrect husbandry is thought to contribute to egg retention — suitable temperatures including pre breeding cooling where applicable must be maintained. In snakes the condition is sometimes associated with small cages, lack of exercise and obesity in females. A diet lacking the proper calcium:phosphorus ratio and other nutrients may be a factor. The female may want to be alone when laying. Disturbance and handling of gravid females should be avoided. Gravid females should not be transported — newly imported females carrying eggs/young should be avoided although tempting visions of quick breeding success, they often produce stillborn young or suffer from egg retention. In-breeding has also been suggested as a predisposing factor — this should be avoided.

When dystocia occurs there is nothing the keeper can do — the animal needs veterinary attention: failure to obtain this will probably result in death.

LIVEFOODS

From America a livefood company advertises livefoods such as 'daphnia, fruitflies, infusoria, microworms, grindal worms, duckweed and algae'. Aquarium and pondkeepers may well be amused by the last two items being offered for sale (we could make a fortune from the duckweed alone!). Infusoria cultures could be useful although there are various traditional methods for culturing these as many aquarists will know. Newly hatched newt larvae feed on infusoria — for the benefit of the uninitiated, bruised lettuce leaves, hay or small squares of dried turnip left in a jar of water in bright light will develop a nutritious 'soup' for fish fry and newt larvae. Anyone using fruitflies cannot buy large quantities in Britain — the keeper has to culture them. Starter cultures are not always easily available, especially the wingless variety, and are often disappointing. We have received cultures which consisted of a small vial of sloppy medium to which a few flies had been newly added. In the post the medium had engulfed the flies, even using a microscope we could find no trace of eggs which the supplier assured us would be present and would soon hatch — none did!

OUTDOORS

During the recent summer months various localised plagues of insects were reported, mainly in the south of England. The reverse has applied in our garden, a noticeable reduction in common insect species as well as a distinct lack of worms and slugs — the latter two are normally collected for amphibian food. No doubt the hot, dry

CHAMELEONS — SOME LIKE IT COOL

Male Mountain chameleon (C. montium) from Cameroon requires high humidity and lower temperatures than many other species.

PHOTO: BOB & VAL DAVIES

Since Madagascar clamped down on the export of all but four species of chameleon there has been an increase in the number of African imports especially from Cameroon. Buyers do not always realise that chameleons from different parts of the world require different treatment — there is no standard treatment for all species.

We recently gave a care sheet on the Panther chameleon (from Madagascar) to an acquaintance who then applied the conditions to a newly purchased Mountain chameleon (*C. montium* — Cameroon). The next day he telephoned to say the chameleon was drinking heavily, refusing food and gaping. The animal was evidently dehydrated when purchased but the cage temperature was too high. Most of the available Cameroon species are from mountainous areas, some from high altitudes and do not withstand the temperatures required for Panthers. Also, in the wild Cameroon chameleons are subject to relatively low temperatures overnight.

Having kept and bred *C. montium* for some years we have found them to be much hardier than Panthers. Our specimens are housed in vivaria in a converted garage, normally used for hibernating various snakes and lizards. A tubular greenhouse heater with a room thermostat is set to keep the temperature at 48°F (9°C). The chameleons each have a 40 watt thermostatically controlled spot bulb and a 15 watt full spectrum fluorescent tube. In their part of the garage the overnight temperature occasionally drops to 45°F (7°C) but is usually a minimum of 48°F (9°C). In the morning they approach the spotlamp and bask for a short time — day temperature away from the spot lamp averages 70°F (21°C). In summer temperatures as high as 82°F (28°C) have been experienced — a fan is used during heatwaves to prevent higher temperatures. Another Cameroon species *C. wiedersheimi* is thriving and has bred under the same conditions. The substrate for both species is sphagnum moss, kept dampish in winter and wet in summer — roughly one third of each vivarium side is ventilation mesh. Humidity requirements differ for various chameleon species according to their origin.

Certain montane species are said to be subjected to frost overnight but it is advisable (with any reptile or amphibian) to use somewhat less extreme parameters than those experienced in the wild. British weather is not always suitable — prolonged cold, wet weather can prevent feeding and food metabolism with undesirable results. Also species from extremely high altitudes may become distressed in very hot weather. As with any reptile or amphibian species it is important to do some research and ascertain the necessary conditions.

Footnote: Dehydration is common in newly imported reptiles, especially chameleons. They should not be given copious amounts of water immediately — this can be harmful. Rehydration should be gradual. Probiotics (available from specialist dealers) or unflavoured electrolytes (from chemists) have proved useful in rehydration therapy. Vetark produce probiotics and an "intensive care" treatment — read the instructions before use.

CHANGING TASTES?

Green Iguana — popularity seems to be waning as people become more aware of the problems of keeping them.

PHOTO: BOB & VAL DAVIES

Having recently spoken to several traders it would seem that, at least in our part of the country, the popularity of red-eared turtles and iguanas as pets is waning. For some years both have been imported in substantial numbers to satisfy the demand for them. Some of the traders said that they don't now stock red-ears and that iguanas are not selling as readily as they used to do possibly because there has been adverse publicity concerning both species.

People seem to be more aware of turtle dumping which frequently occurs when the tiny, colourful baby starts to outgrow its aquarium and needs constant water changes — not only is dumping an offence but it is not fair to the unfortunate animal. Iguanas also present problems of space and all too frequently large specimens are seen offered for sale, often complete with vivarium and equipment — the owner has had enough! According to veterinary evidence, and personal experience, many pet iguanas suffer from Metabolic Bone Disease (MBD) brought on by an inadequate diet. MBD actually covers several conditions connected with dietary deficiency — it can take some time to become apparent and unless detected early is usually irreversible. Turtles also suffer from deficiencies which produce deformed shells, kidney and eye damage and other conditions. In the USA both species have been linked to salmonella infections and attacks, usually by male iguanas on women, have also been reported.

Imports of iguanas have not stopped altogether — a number of iguana shipments have been confiscated by HM Customs & Excise this year because the animals were under the legal size (10cm snout to vent). Not being CITES-listed red-ears could formerly be freely imported without licences but since June 1 1997 they are listed on European Annex B which now means that an import licence is needed. It is possible that licences could be withheld if the numbers being imported are too high.

Both species are fascinating creatures and deserve proper treatment. Before purchasing take a long, hard look at the facts. Unless you can provide proper care don't buy them!

spells accounted for their absence. Few gardeners bemoan the absence of greenfly but we usually collect large amounts as food for small frogs and baby chameleons but this year they were in extremely short supply. In previous years the sycamore leaves have produced a sticky substance on their upper surface and thousands of greenfly on the underneath. This usually occurs in early summer, but this year the sticky substance failed to appear and the numbers of greenfly were drastically reduced.

The common frog population, in spite of the hot weather were noticeable during the daytime, hiding among the plants and leaping out to seize whatever insects were available including honey bees which have been present in small numbers only — their numbers have apparently been reduced by an invading mite. As the sun went down many frogs were seen settling out to forage in the surrounding area, returning to the pondside in the early morning. By the end of August many specimens still appeared quite slim. The problem facing them is of course that they need to build up reserves to carry them through hibernation or they may succumb.

DAVID TWIGG'S KOI CALENDAR

Writing in October (just) for November about happenings in September is really not as bad as it sounds.

First of all I spend my holiday in Cornwall and couldn't resist the temptation to check up when the Plymouth Section of the BKKS had their monthly meeting. As it happened it turned out to be right slap bang in the middle of my holiday so, after failing to contact the PRO of the club on the phone (he was on holiday too!), Lyn and I took pot luck and drove to Plymouth on the off-chance that we would find the meeting place from the information to hand. We did!

Our arrival at the venue was a little late and we were met by Brian Crocker who informed us that their speaker for the evening had had to postpone and that members had just finished a Koi appreciation quiz as an alternative. Brian then said that as the results were not yet announced: "Would I like to try my luck?"

Well, what can you say when you have just been bought a drink? It was obviously not my night when it turned out that I had scored 13, definitely not a winning number!

I asked if I could have five minutes to talk about *A&P* and I think that ended up at about 35 minutes because amongst other things I got questioned about my photographic techniques ... not my strong point!

Thank you Plymouth for a very enjoyable evening.

A couple of weeks later it was off to Dai-Ichi Bonsai near Newbury for a Bonsai and Koi weekend. Lyn and I were relatively early arrivals on the Sunday and managed to obtain a 'stream side' seat at the auction where some very nice Koi passed by us. Oh, how I wish my pond were not already overstocked, I was sorely tempted by some of the fish on offer, many of them selling at very low prices. A special treat on the day for those attending was the Spitfire that flew very low, at high speed, directly overhead us on three occasions. Apparently we benefited from an Army Open Day Display about half a mile down the road.

Thank you, Bob Thompson and Geoff Kemp, for your hospitality.

A couple of weeks later ... it was off to Kent with a Heart of England Koi Society coach trip. First stop was Koi Water Barn where John Pitham and his staff made us very welcome. Not only was there a good selection of Koi here for us to view but KWB has a room set aside as a filter showroom with different systems to suit all pockets. John very kindly donated two 4in (10cm) Kohaku for our coach raffle on the way home. Lucky winners were Bryn Wilson and Geoff Andrews. I understand both Koi are doing well at time of writing.

We then moved on to the Nishikikoi Centre at Hawkhurst where Keith Phipps and his new bride Nicki were handing out pieces of their wedding cake to the visitors. Sadly, several of the tanks here were empty in preparation for the new stocks due to arrive shortly but even so there were some lovely Koi on offer and at least one of our members was tempted to buy a couple of 6in (15cm) Showa.

The journey home was via a Bonsai specialist and members disembarked the coach having had a thoroughly enjoyable day out with fellow members with like interests. This is the pleasurable social side of Koi keeping. My thanks to organisers Anne and Mick Buller.

KOI MEETINGS IN NOVEMBER

5 Leicestershire Section BKKS. Open forum at Kirby Muxloe Sports Club. Contact Ray Dunkley, 0116 2771600.

11 Nottingham & District Section BKKS. AGM & discussion on activities in 1997. Meet at the Western Club, Hillside, Nottingham. Contact Shirley Hind on 0115 981 0923.

12 Merseyside Section BKKS. Monthly meeting at Broadway Country Club, Norris Green. Contact Phil Adamson on 0151 287 9911.

15 Northern Koi Club. Annual Dinner/Dance. Contact Tony McCann on 0161 794 1958.

16 Leicestershire Section BKKS. Dealer trip to Aquaterdine and West Country. Contact Ray Dunkley, 0116 2771600.

30 Northern Koi Club. Speaking on 'Varieties of Koi' is Kate McGill. George Carnall Leisure Centre, Urmston, Manchester. Contact Tony McCann on 0161 794 1958.

All Koi keepers are welcomed to the events mentioned in this Calendar (an entry fee may be payable) and further details can be obtained from the contact telephone number quoted alongside the diary entry. My thanks go to all Koi Club Secretaries or PROs' and others who send me their latest calendar for inclusion in this column. If your club is not mentioned and you would like it to be, please write to me via the Editor at MJ Publications Ltd, Caxton House, Wellesley Road, Ashford, Kent, TN24 8ET. Although I do my best to ensure all events are mentioned it may be that some information, which arrives a little late, misses my deadline. To minimise the chance of this occurring you may find it more convenient to fax me direct on 01926 483500. This request also applies to dealers with special events, auctions, etc. I look forward to hearing from you.

Tetra COMPETITION

Caring for Koi as Autumn Approaches

As summer turns into autumn and the days are getting colder and shorter your pond fish will benefit from a little extra loving care.

TetraPond Wheatgerm Sticks for Koi is a particularly effective pond food to help your fish prepare for the colder winter months. These floating food sticks are the result of many years of intensive research and development by Tetra into the specific needs of Koi kept in a European climate ... research that will not only benefit Koi but other species of coldwater pond fish as well.

Full of proteins, vitamins and minerals the digestion rate of the food is excellent, even during cold spells, and its fibre content is a vital ingredient which helps prevent digestive disorders as well. The high level of wheatgerm has also been enriched with spirulina algae, natural colour enhancers, vitamin E and stabilises Vitamin C to ensure your fish exhibit splendid colouration and vitality.

Feed TetraPond Wheatgerm Sticks only when your fish show an interest in feeding — which will only be on mild days through the winter. Tetra's research has shown that these small feeds during the winter will keep your fish healthier and ensure they are strong enough to resist disease problems when water temperatures rise in the spring.

Enjoy your pond this winter by watching your fish rise to the surface to feed on the floating TetraPond Wheatgerm Sticks for Koi.

We have 12 200g tubs to give away to readers of Aquarist & Pondkeeper. Simply write the answers to the following questions on the back of a postcard and send it to:

DEPT WG,
TETRA COMPETITION,
PO BOX 2162,
BOURNEMOUTH BH2 5ZA

to arrive no later than December 10, 1997. The first 12 correct entries to be drawn will each receive a 200g tub of TetraPond Wheatgerm Sticks for Koi.

QUESTIONS

1. What climate are the TetraPond Wheatgerm Sticks for Koi designed for?
2. Are the TetraPond Wheatgerm Sticks for Koi designed just for Koi?
3. Which vital ingredients in the TetraPond Wheatgerm Sticks for Koi helps to prevent digestive disorders?

Jackie's Juniors

Well, I did ask, didn't I? After a day's outing to the Lakeside Aquatarium (see Newsdesk, *A&P*, June 1997) members of St Bridget's (CofE) Primary School at Brigham, Cockermouth, sent me all sorts of reports on their trip and I am happy to reprint some of them here. Also, members of the Seascale Junior Fishkeeping Society have sent in reports of their Open Show held earlier this year. Thanks everyone for all your contributions — after last month's 'bumper bundle' it seems that you Juniors are now getting into the swing of things. Keep it up, all our other Junior readers are waiting to hear from YOU!

• Aquaquest (by Rachel, aged seven)

There was Tadpoles,
There was baby Crayfish,
There was Froglets,
There was well pond,
There was Dragonfly Nymph

• About the Seashore Section

It was good at the Seashore Section because there are Fish, Sea-Anemones and Shells and if you turn a wheel it makes waves in the water.

• The Pike (Lucy) (by Lucy Ward, aged eight)

My favourite bit was the Pike because it has my name (Lucy). You could walk over a bridge and on one side was lots of tiny little fish. The Pike was a blacky colour and it was very BIG.

• Fish, Fish, Fish (by Kimberley Bell)

I like small fish swimming in the sea,
I like big fish close up to me,
I like fish in the tank,
But I don't like them dead on a bank.
I like Angelfish, I like them all,
But best of all, on my wall.

• About the Seashore by Sarah Goulding

We came to a room where there was a seesaw. There was a big wheel you could turn and it would make waves — there is real water in it. The water is real salty water from Morecambe Bay. There is sand in the bottom and it went deeper and deeper like the real sea. There were little rocks and little fish, some Sea-Anemones and lots of shells. The fish were very little.

There was a lady who worked there called Rebecca, a man called Warren and another man called Graham.

• The Big Tank

I liked the big tank best because you can look through the bottom, through some glass and see the Thornback Rays and Sharks. It was a great day out. We saw an Octopus and in its tank there was a pot and the octopus was hiding under it. After that we had lunch and then got on the boat and went back to School.

• Lakeside Aquatarium

When we went in we saw a big waterfall and it had fish in it, they were called Trout, Perch, Salmon and Tench. Then after that we climbed some stairs and we saw the map of Cumbria and we saw where we were. Then we were in a Boggy Marsh where there was meant to be Frogs but it was too hot to see them. Then in the same room there was a Mountain Stream which had a Spy-hole in it.

Then we went straight ahead and went into a place that showed fish in the dark and we saw some crayfish. Then we went to Aquaquest and there was some Tadpoles, newts and Toads. In the next room there was some Rudd and some Koi. We went over a Bridge and down some stairs and we were in a tunnel. We looked around and we saw some fish and then I saw a Diving Duck and I saw the head of the duck under water. We went round a corner and saw a big tank and in it was a Pike. We saw what it was like on Morecambe Bay where there was some fish getting waved about. We went through a passageway and found ourselves near some Thornback Rays and some Dogfish in a big pool and a bridge. There was an octopus in a tank of its self. Then we went out for lunch.

• The Seashore Tank

I rather enjoyed the Seashore Tank. You can make waves with a handle and the waves move the things in the water. Inside the tank there are Red Sea-urchins and some white fish called Blennies.

Meanwhile, back at the Fish Show ...

The Show went very well and we had 250 entries, and the Koi tent, Solway parrots Society and the Lazer Maze. The Auction went well, we had 14 Lots and everything got sold.

Thank you for the posters, badges and books you sent us, we hope you can come next year.

From Hillary, Kerry, Jacqueline and Michael, members of the Seascale Junior Fishkeeping Society.

Professor David Bellamy wades into Badsell Park Farm, in Matfield, near Tonbridge, Kent, with a group of inner-city children, to launch Pond Week '97.

Remember, those lovely people at John Allan Aquariums are giving a prize for the best received — SO DON'T DELAY — DO IT TODAY! Please write to: Jackie's Juniors, c/o A&P, MJ Publications Ltd, Caxton House, Wellesley Road, Ashford, Kent TN24 8ET

Most pumps are designed to run 24 hours a day, 365 days a year, but a little care goes a long way ...

Pond Pump Maintenance

Generally, most pumps take care of themselves, although many owners decide winter is a good time to remove their pump for annual maintenance.

A badly neglected pond pump.

PHOTO: RAP LIBRARY

The pump is an integral, and often most important, part of the pond. They can create fountains and other water features as well as having more practical uses like preventing stagnation with water movement, helping oxygenate a pond or run a filtration system. Whether you have a small feature with a feature pump or a large Koi pond with a sump pump, knowing the best way to look after it and keep it running is always useful. The end of the season is a good time to do a little annual maintenance.

Before maintenance takes place ALWAYS DISCONNECT YOUR PUMP FROM THE ELECTRICAL MAINS SUPPLY. In some cases, pumps are wired into an electrical supply, so if in any doubt always consult a qualified electrician.

Most pumps are designed to run 24 hours a day, 365 days a year in order to maintain an efficient filtration system but it also suggests that the pumps will take care of themselves. Generally they do, but a little care goes a long way. Many owners decide winter is a good time to remove their pump from the pond assuming it's not necessary to run the pump when their fishes have stopped feeding and producing waste. People who keep fish, particularly Koi, in a heated pond keep the fish feeding through winter and thus producing waste which needs the pump to keep powering the filtration system all year round. Complete removal from the pond isn't always necessary, only if the pond is less than 2ft deep is there a chance of danger from frost. Generally, ponds are a lot deeper, so a quick maintenance check with your pump returning to the pond in some cases is ideal.

When lifting pumps from the pond NEVER LIFT BY THE CABLE: this can cause pump failure as if done regularly can wear the seal which allows water ingress into the electrical part of the pump, thus destroying it.

CHEAP REPLACEMENT PARTS

When stripping down it becomes easy to spot potential problems. A pump which runs all year round may develop some wear, particularly the impeller which may be sat loosely on the ceramic shaft thus displaying a lot of sideways movement. The rubber seals which prevent water ingress can also suffer from wear; look for cracks in the seal. Most replacement parts are very cheap and all manufacturers are willing to supply new impellers and seals. Spotting problems like the impeller failing can prevent you being parted from your pump while it's repaired or returned for replacement.

Whenever you clean or maintain a pump never use chemical cleaners or detergents, use either water from the pond or clean water from a rainbutt: tapwater contains chemicals which although beneficial to us can kill fish and aquatic life.

Cleaning the internal part of the pump is usually an easy process of removing the rotor assembly and cleaning the inside of the rotor housing with a soft cloth and water. When reassembling it is best to hold it upright to help keep the seals in place.

If you are not returning the pump to the pond, having decided to place it in storage over winter, store it somewhere dry until you are ready to use it again. If you return it to the pond but have no intention of using it continuously over winter, switch it on periodically for a couple of minutes to prevent any moving parts from seizing up over the winter months.

You will notice that you can only get to the mechanical areas of the pump and not to the internal components. These are sealed for your safety, never try to tamper with these, or the cable entry to the pump. If an electrical problem develops, or you suspect one, always refer to the manufacturer.

Sump pumps are generally used in larger ponds and left in the pond right through winter. These pumps don't have a pre-filter, so weekly maintenance is not required (this is particularly useful if the pump is less than instantly accessible in the deep part of the pond!) If you feel it would be wise to clean the pump it's simply a case of removing the impeller, cleaning it and making sure there are no obstructions preventing the impeller moving freely. If you decide to remove and store the pump it is recommended that you store the pump submerged in a bucket of water to prevent the seals drying out and causing problems when you restart the pump next season.

Surface pumps tend to be a little more difficult to maintain but they are out of water, so access is easy. Most surface pumps come with a strainer basket which acts as a pre-filter and this should be routinely emptied of the flow through the pump will be reduced. Access to the impeller can be a little more difficult but it's a good idea to check these pumps for blockages, or anything else which could be causing resistance. Most surface pumps are 'solid handling' but the strainer basket should take out any large pieces of debris preventing any major problems.

The pre-filter in a fountain pump needs to be cleaned at least once a week in order to maintain a constant flow of water.

PHOTO COURTESY OF BRADSHAWS

The sump pump is often the popular choice of the discerning pond owner.

PHOTO COURTESY OF BRADSHAWS

Pond Pump Maintenance

ROUTINE MAINTENANCE

As well as annual maintenance, there is routine maintenance that can be undertaken to get the most out of your pump throughout the year.

Fountain pumps used for water-features and small-to-medium sized ponds are characterised by having an integral pre-filter. This usually takes the form of a piece of foam held inside a strainer cage. These protect the pump and impeller from damage and also prevent fountain heads from clogging up.

The pre-filter in any pump needs to be maintained and cleaned at least once a week; this will help maintain a constant flow of water to your filtration system too. As the pre-filter begins to block up, the flow rate will start to reduce and greatly affect the efficiency of the filter. Cleaning need be no more complicated than removing the pre-filter foam and rising it in clean pond water, not tap water. Usually in a reasonably clear pond these pre-filters would only need to be cleaned once a week but it depends greatly on the clarity of water in the pond. An ideal solution to this problem is to buy a larger pre-filter (they are readily available for all makes and models of pumps); this increases the surface area of pre-filtration and prolongs the periods between cleaning. They are great if you're starting with a pond with less than perfect water clarity or if the thought of putting your hand in a pond once a week doesn't fill you with joy!

POPULAR CHOICE

No such problems with a sump pump, whose design enables larger pieces of semi-solid matter to pass through the pump into the filtration system. A sump pump is often the popular choice of the discerning pond owner, because the pump doesn't get blocked, a constant flow rate can be obtained and the filtration system benefits as the debris and waste passed through the pump aids biological action tremendously.

Although purchasing a pre-filter for a sump pump may sound a bit silly, using for a limited period can bring benefits. Some pumps can pass solids up to 10mm in size which can make them slightly indiscriminate about what they are pumping. Very small fish or aquatic life can often be sucked through the system, so people often buy pre-filters to protect small fry or small aquatic life like newts or tadpoles.

Whatever type of pump you have, always remember to use a circuit-breaker. In most cases, owning a pump means you are placing mains electricity into water — not something most sane people do! A circuit-breaker protects you and your fish from electrocution in the case of pump failure.

This article was prepared with grateful assistance for information provided by Bradshaws.

FASCINATING FISH FACT

The Fearsome Pike

By LINDA LEWIS

The pike is a fish of contrasts. Well known for its predatory behaviour it may lie in wait, still and silent amongst reeds, seeming to the casual observer almost lifeless. I have watched people at London Zoo gazing at the resident pike — many have concluded that the fish is just a model. If only they knew!

Once a meal-sized fish comes within range the pike can dart forward at lightning speed and grab its prey by the head. In an instant the hapless victim is flipped round and swallowed head first in an action too fast to see clearly.

Here's something to think about ... It is said that if there are several young pike in a stretch of water or pool the bigger ones will make meals of the smaller ones until just a single, large specimen remains. How does this lone fish then find a mate?

Caught in the Net

Kathy Jinkings finds the Net is full of general aquatic interest

Over the past few months we have looked at a lot of sites specialising in one type of fish where you get in-depth information dealing with that particular species. This time we will be looking at some of the sites that contain general information, where you will be able to find out about lots of different species and fishkeeping as a whole.

The first stopping point is AquaLink at **http://www.aquallnk.com/**. This massive site bills itself as the world's largest aquaria web resource, and if there's a bigger one I haven't found it. The site is well laid out and easy to navigate. If you are looking for information on a particular topic, the first page offers a search box, so that you can find what you want immediately without going through all the pages. If you only ever used this, though, you would be missing a lot, as there are sections on just about everything here. Freshwater and marine aquaria each have their own section, as do aquatic plants. Headers such as anatomy, behaviour, feeding, filtration and many more lead the reader on to a variety of articles on that subject, which build up to a complete picture. For example, the anatomy and behaviour section covers subjects including stress, schooling behaviour, what fish scales are, and external, internal and skeletal anatomy. The site is frequently updated, and a variety of columnists produce regular articles. You can drop in to read the latest in the livebearer column, catfish and company, corydoras corner, tank tales, the crayfish corner and many more. The catalogues provide a quick reference guide to 1,500 species of marine and freshwater fish, and an extensive plant catalogue will help you plan your planted aquarium. The help desk is staffed by a variety of experts in different fields, and you can send them an email if you can't find the answer on the site. There are also bulletin boards and mailing lists where you can participate in ongoing conversations, a disease encyclopedia and more. Not content with all this, there is also a software section where you can download programs and pictures to customise your PC with fishy wallpaper, screen savers and icons. Although there is an extensive shopping section this is of limited interest to us here in the UK. An extensive links section leads, among many others, to our next stop.

FINS, the Fish Information Service, is at **http://www.actwin.com/fish/index.cgi.** This is a storehouse of information that has passed through the internet. The FAQs (Frequently Asked Questions) provide a quick guide to a variety of fish related topics, so if you are looking for simple information this is a good place to start. A number of archives also reside here, which are transcripts of debates and conversations that have taken place in mailing lists and in the Fishroom MUD. The advantage of getting your information from the archives rather than 'live' is that you only need look at the topics that interest you, rather than reading all the mail from the list. There is a download area for various pieces of software, mostly shareware demos for programs to assist you with tank or pond maintenance. A particularly interesting section, for those whose DIY furniture doesn't collapse a week after it was assembled, gives a number of do-it-yourself projects, where you can have a go at building your own protein skimmer or trickle filter. The collection of pictures and movies is interesting for those with time to download (and extra money for the phone bill)! If you are trying to find a particular club or society there is a very helpful list of them, both in the USA and worldwide. This includes all the clubs, not just those with web pages.

The Krib covers a lot more than just Kribs! It can be found at **http://www.cco.caltech.edu/~aquaria/Krib/**, and is well worth visiting. The do-it-yourselfers can continue their attempts with instructions on how to make your own aquarium hoods in great detail, while the Plants and Planted Aquariums section contains lots of information not only on the plants themselves, but also algae and the arcane sciences of CO_2 injection, fertilisers, and undergravel heating. There are articles here describing real planted tanks, and anyone planning a new set-up (or just a change-round) should find some inspiration here. As you'd expect from a site called the Krib, there is indeed information on dwarf cichlids here — not just Kribs, but also Apistogrammas, Rams, and other dwarfs. The information is drawn from articles that were posted on newsgroups, so you are reading about the experiences ordinary people have had with these fish. Other sections include fish, food, lighting, filtration, chemistry and lots of others.

At Fish Fair, **http://petstation.com/fish.html,** the library doesn't contain many articles, but it does contain primers for three main areas of fish keeping — tropical, goldfish and marine. For someone seeking basic information these articles provide it. The talkback area allows you to leave queries or statements for other people to read and hopefully answer. These range from sensible discussions to the pointless message 'i have 15 fish and i love them', presumably from a member of the anti-capital letter league. At the bottom of the page is a moment of light-heartedness with a cartoon of a goldfish — if you like him you can follow the links to see more cartoons from the series 'Mutts'. I suspect this is American, as I've never heard of it, but they are quite funny. Unfortunately I couldn't find any more featuring the fish, but various other animals appear.

The folks at Petstation, the master site of which Fish Fair is a part, have an entirely overdeveloped fondness for alliteration. By following links you can visit sites with such names as 'Cat Cabana', 'Herp Hacienda' and 'Bird Barn' if you get tired of reading about fish.

Jaws, 'Just Aquariums Web Site' at **http://www.badgerstate.com/JAWS/index.html,** also includes a humour page, this time consisting of readers' funny stories about their fish. There's a lot of serious stuff here too, on a scale that almost rivals the AquaLink site. There are more FAQs, dealing with lots of topics including fish photography, filtration, disease, nutrition, acclimatising fish and conversion tables. A breeding section offers articles on a range of fish species. If you like leaving your mark on sites, you'll be in seventh heaven here, as there are no less than five different places you can leave messages. Submit to the comments or help desk sections, sign the guest book, leave a message on the board, or join in the chat room to talk interactively with anyone else who happens to be there. The pictures section contains a good range of photos, divided up into Tropical, Marine, Cichlids and Catfish.

Aquaria Central, **http://www.aquariacentral.com/,** is another massive site, again with a search engine to help you find what you are looking for. A selection of articles deals with topics as diverse as photographing your fish, brackish tanks, and an aquaria dictionary which will help you understand aquatic techno-speak. Another do-it-yourself page has a massive selection of projects, from building an aquarium to building a fishroom. Working with acrylic, aquarium stands, and even constructing an indoor pond are explained here. The Breeding Your Fish section proved a disappointment, with many entries being terse one liners, but the picture gallery should satisfy everyone, with 5Mb of fish photographs. Once again, message boards and help desks will satisfy more complicated queries. If you fancy having your own web site but your provider doesn't give you any space, Aquaria Central can help — they'll give 1Mb to anyone who wants a page, provided it's aquarium related. One of these sites is featured on the main page — when I visited it was another do-it-yourself project — a CO_2 reactor.

Finally, although I won't inflict a review on you, you could visit my own site at **http://www.cfkc.demon.co.uk.** The British Aquatic Resource Centre features information about, and articles by, a number of aquatic clubs across the UK (and is always looking for more to join in!). There are also links, puzzles, British events, and previous articles in this series.

Next month we will be looking at how fish have fared with some of the newer technologies on the net, including VRML (3D worlds) and live video cameras.

Kathy can be contacted at ***kathy@ckfc.demon.co.uk*** *and the British Aquatic Resource Centre can be found at* ***http://www.cfkc.demon.co.uk***

Aquatics Expert Wins International Recognition

Keith Barraclough — respected all over the world as a champion of tropical fishkeeping in the home — has been awarded the highest honour of the aquatics industry. He was unanimously elected an Honorary Life Vice President of Ornamental Fish International by delegates from all over the globe at their meeting in Singapore in recognition of his 45 years' service to the aquatics industry.

Keith's lifelong passion with fishkeeping started with a small pet shop in Bradford over 40 years ago and grew into King British — an aquatics manufacturing business known all over the world for its ranges of ornamental fish foods. The business is also involved with retailing, wholesaling and the importing and distribution of tropical and coldwater fish.

Speaking from his Halifax home, Keith, 62, said: "I realised very quickly that the only way to be successful was to raise the awareness of the general public of what is required to take a fish out of its natural habitat and get it to adapt to the aquarium environment."

In 1974 he embarked on a 15-day Amazon expedition to explore the natural habitat of a large group of fish which are now seen in aquariums all over the world.

Keith became active in trade associations and in 1980 was a founder member of OFI at a meeting in Italy. He believed that OFI could help to educate fishkeepers as well as fight a vital corner on livestock management in transit and conservation.

Through King British business and OFI activities Keith travelled the world many times and over the years became acknowledged as one of the leading experts on ornamental fishkeeping.

OFI chairman Mick Seaby said: "Keith's experience, enthusiasm and commonsense has proved invaluable whenever we have sought his views on matters affecting both OFI and the international ornamental aquatic industry in general."

A couple of years ago Keith retired from King British and he is now running Barracuda Ltd — a freelance marketing company — which is taking him into a variety of completely new activities, although he continues to retain his links with aquatics.

Speaking of the OFI honour, Keith said: "It's been an incredible journey of development in raising standards in an industry that only really began to emerge in the early 1950s as fishkeeping started to grow in popularity."

PROJECT PAOLA

A young Italian girl who had seen a TV programme about the Naples Institute for Zoological Research 'Anton Dohrn', with her father's help rescued an injured Sea Turtle captured in the nets of an Italian fishing boat and destined for soup, and took it to the Institute.

Dr Flegra Bentivegna performed endoscopy, removing a fish hook from its throat and numerous others from the digestive tract. In honour of the 15-year-old girl the turtle was nicknamed 'Paola', and five months later was ready to be returned to the sea.

The Research Centre satellite monitors Sea Turtle movements around the Mediterranean and decided to use Paola, 87cm long and weighing 50 kilos. MEDASSET, the Mediterranean Association to Save the Sea Turtles, organised the release in Kefalonia, western Greece.

Arrangements were made to track her for six to eight months using the satellite facilities of the US Government, National Organisation and Atmosphere Administration (NOAA), and the location tracking services of Argos CLS processing centre in France.

Fitted with the transmitter and tracking arrangements made she was released in Kefalonia in the presence of local and Italian dignitaries and a crowd of local inhabitants. A RAI TV crew filmed on the surface, and divers from the Greek Underwater Activities Club filmed and photographed in the water. For a week the story and video was shown on all Greek television stations.

Paola moved south-east down the Peloponnese coast. Then, on May 25 ceased transmitting, just off Cape Tenaro, on the Mani Peninsula. At MEDASSET, press releases were issued, port authorities and vessels alerted. Antenna TV broke the story on the news: "Where was Paola?", replaying the video of her release.

Incredibly, the first call out of 19 told of a fisherman who had caught her in his nets off the island of Kos in the Aegean, 190 km from her last known position. It seemed too far away.

Paola became a celebrity, newspapers, TV and radio carried update reports. She became the butt of comedians and satirical shows on TV, conservation was having a field day.

The fisherman was traced. He confirmed the story: "It had a transmitter, was fit and healthy, and when released rushed down the beach to the water." Paola resumed transmission from where the friendly and humane fisherman released her. There had been a sheet of plastic entangled around the aerial which he cleared and Paola now continued eastward, broadcasting a signal of thanks.

The latest transmission from Paola was in August between the island of Lesbos (Greece-Aegean Sea) and Dilek (mainland Turkey).

You can switch on to Sea Turtles at their website on the Internet at: http://www.zoster.ac.uk/MEDASSET

MEDASSET can be contacted at: 2/4 Park Towers, 2 Brick Street, London W1Y 7DF (tel/fax: 0171 629 0654) or at: 1 (C) Lizavitou Street 106 72 Athens, Greece. Tel: (301) 3613 572. Fax: (310) 7243 007). ▶

.. News Desk ... News Desk ..

Half Price Club Offer

The PDSA's children's club — Pet Protectors — is offering half-price membership during November 1997 to coincide with the Charity's 80th birthday. Membership starts from £4 but for November only it will cost £2. Members receive their own badge, membership card and quarterly magazine, *Animal Antics*.

To join the club please write to: Donna French, Club Organiser, Pet Protectors Office, PDSA, Whitechapel Way, Priorslee, Telford, Shropshire TF2 9PQ *Meanwhile, back at the branch where a rather more unusual case presented itself.*

A Sarasa Comet Goldfish was admitted with multiple skin tumours for removal of them under anaesthetic, something first performed on the fish in 1992, 1994, 1996 and now in 1997.

Veterinary officer John Lapish says: "Removing the tumours is actually quite a simple procedure and, as the goldfish is now 11 years old we believe he has had a better quality of life for it. However, we do expect to see him again as these tumours are a recurring problem."

Graham Bastock, who owns the Goldfish, cannot thank the PDSA enough: "I've had him 11 years now and thanks to the PDSA it could be a lot longer. He always seems to get a new lease of life after having his tumours removed!"

Outbreak of Spring Viraemia of Carp

The Ministry of Agriculture, Fisheries and Food has made an Order designating the inland waters and adjacent land at the following site following the confirmation of Spring Viraemia of Carp (SVC):

Sherwood Park Farm Fishery, near New Clipstone, Mansfield.

The Order, which came into force on August 14 1997, restricts the movement of any live fish or live eggs of fish onto or from the designated area without the previous written consent of the Ministry.

Copies of the Diseases of Fish (Designated Areas) (England) (No 3) Order 1997 and of previous Orders are available from: Fisheries Division II, Branch A, Room 308, Ministry of Agriculture, Fisheries and Food, Nobel House, 17 Smith Square, London SW1P 3JR.

Zoological Society of London Meetings

On November 11 Dr E. C. Holmes, University of Oxford, will be speaking on 'The Emergence of Viral Epidemics: Past, Present and Future'; whether it will include such topics as SVC (see above) is not known.

On December 9 Mr G. Mackay, University of Aberdeen, will be speaking on 'Ecology and Exploitation of Coral reefs off Borneo'.

Both these presentations form part of regular Scientific Meetings which start at 5.30pm.

Admission is free and no tickets are issued. Meetings are open to Fellows of the Society and their guests but other people are welcome to attend if space permits.

A full 'fish-orientated' orientated Scientific Meeting is planned for February 10 1998 entitled 'Little Fishes That Bear Live Young' and will include presentations by Dr P. J. Miller (University of Bristol), Dr B. H. Seghers (University of Oxford), Dr P. Burgess (Aquatic Ecosystems Consultancy) and Dr G. McGregor Reid (Chester Zoo).

The Society also has 'Tuesday Talks and Symposia' (usually held over one or two days).

Full details of these, together with admission charges, are available from: Public Relations Office, Zoological Society of London, Regent's Park, London. Tel: 0171 449 6363/6236/6361.

The Fish Health Regulations 1997

The Fish Health Regulations 1992 (as amended) which implemented in Great Britain the provisions of the EC's Single Market Fish and Shellfish Directive 91/67/EEC together with associated legislation have now been revoked and replaced by the Fish Health Regulations 1997.

The new Regulations, which came into force on August 21 1997, consolidate all of the amendments made previously to the Fish Health Regulations 1992. They also give legal force to a number of recent changes to the EC fish and shellfish health regime.

The Fisheries Department booklet (A Guide to Shellfish Health Controls) will be updated to reflect these new provisions and revised copies will be issued shortly.

A number of other minor amendments have been incorporated into the Fish Health Regulations 1997 to update them and bring into effect several recent Commission Decisions relating to EC approved zones and EC approved farms in respect of the fish diseases Infectious Haematopoietic Necrosis (IHN) and Viral Haemorrhagic Septicaemia (VHS) in France, Germany and Denmark.

Amendments have also been made to take account of the agreed programme for regaining VHS approved zone status for the Island of Gigha in Scotland and to give legal force to changes necessary to fish health Movement Documentation, as a result of the agreement of safeguard measures for the freshwater fish parasite *Gyrodactylus salaris*.

Copies of the Fish Health regulations 1997 (Statutory Instrument 1997 No. 1881) are available from the Stationery Office Ltd price £5.60. If you have any queries on these regulations, or on any of the new measures outlined above, please contact Julie Whiting, Fisheries Division IIA, Room 312/315, Nobel House, 17 Smith Square, London. Tel: 0171 238 5739.

Coral Seminar

This Seminar is being organized by the Coral Conservation Group (CCG), which is a sub-group within the British Zoo Federation's Fish and Aquatic Invertebrate Taxon Advisory Group (FAITAG). The CCG was formed in December 1996 and adopted its initial aims and objectives as follows:

- To help raise awareness about coral reefs, the threats to them and the need to protect them.
- To collate guidelines on the husbandry/propagation of corals in captivity, promoting this and thereby allowing people to enjoy these fascinating creatures and, at the same time, reducing the need to collect from the wild.
- To organize a seminar on coral cultivation during 1997.

The Chairman of CCG is John Jarvis, Assistant Curator of Liverpool Museum Aquarium and, he is being helped with the seminar by Justin Bell, Senior Keeper at Chester Zoo Aquarium and, with assistance from Colin Grist Curator of Blue Planet Aquarium, which is currently under construction at Ellesmere Port.

The seminar, which is titled 'Coral Cultivation — The Way Forward', is a full day of talks by hobbyists and professionals alike on many aspects of keeping, rearing, and propagating corals. The speakers include Elizabeth Wood (Marine Conservation Society), Keith Davenport (OFI UK), Joe Pecorelli (Curator, London Aquarium, County Hall), Steve Forsythe, Les Melling (West Yorkshire Marine Aquarists Group), Geoff Connor (CITES) as well as John Jarvis, Justin Bell and Colin Grist. In addition, negotiations are currently under way with several international sources, which, if any confirm, will be a great bonus to the event.

If anyone has any interest in corals, reef aquaria or marine invertebrates in general, then this is the event to attend.

The Seminar will be held on Saturday, November 29, 1997 with talks commencing promptly at 9.15am.

The venue is the Lecture Theatre, Chester Zoo, which is near to the Zoo's Park & Ride facilities. Tickets are £9.50 each and cover the Seminar, Refreshments, Buffet Lunch and a Transcript of Talks. There is ample free parking.

If you require further information please contact: John Jarvis, Liverpool Museum Aquarium: 0151478 4298; Justin Bell, Chester Zoo Aquarium: 01244 380 280, ext. 244.

Chenies Suffer Setback

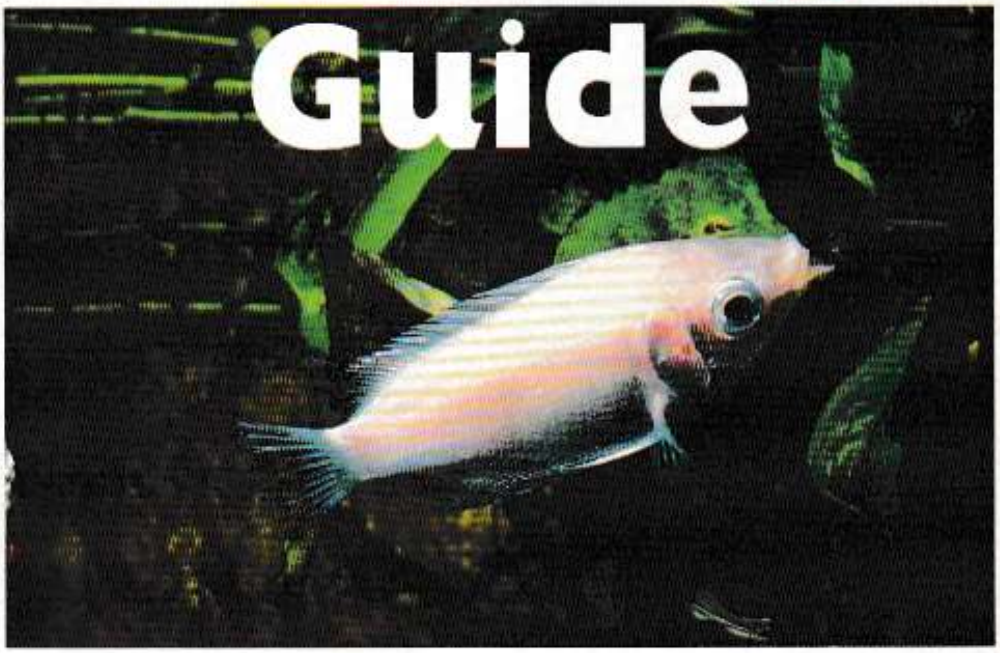
Due to a serious fire at their Farnham Royal premises Chenies Aquatics regretfully apologise for the limited service that will be continuing in the immediate future. Graham Robb, Managing Director, would like to take this opportunity to thank all those who have contacted him to offer sympathy and support since the fire occurred. "Sorting things out, from ground-level ashes upwards, is not a task I look forward to," he said, "but it is encouraging to know we have so many good friends out there willing us on to recover from this terrible situation."

Meanwhile, a 'Full service as usual' can be found at the company's other premises at Chenies, between Little Chalfont and Rickmansworth.

An **A&P** first — straight from the fish's mouth

PHOTOGRAPH BY M. P. & C. PIEDNOIR

Tarquin's Owner Training Guide



My name is Tarquin Kisser ... and I'm the most talented, beautiful fish in the world.

I don't suppose I really need an introduction being the most famous fish in the country, probably the whole world. However, for those who don't know who I am, my name is Tarquin Kisser and I'm the most talented, beautiful fish in the world and what I would like is to help you to attain my perfection.

Aquarists concentrate so much on pH levels, hardness, softness, Nitrites, Nitrates and so on and so forth. I'm sure all that is important to us, but what of our psychological wellbeing? I do know quite a few of you suffer in this way. You may have noticed these magazines carry

all kind of advice columns for every imaginable problem that could befall us — but is there an Agony Aunt (or Uncle) for our psychological problems? No, there isn't — and that is because lots of aquarists are under the misguided impression that we fish don't have brains. Therefore, now I think the time has come for us to shoal together and let it be known that we are highly intelligent creatures; perhaps Mr Mills will let us have our say! If any of you have any problems you could write to me (in strict confidence, I won't tell your owners) and, hopefully, I can help you.

You may wonder what gives me the right to set myself up as an expert in these delicate matters — and make no mistake I am an expert! I know it's been said I'm stupid, brainless and psychotic, that I put down to ignorance on the part of the human species. How many of your owners have other pets, like dogs or cats? How do they treat those pets compared to how you are treated?

THE PERILS OF A 'SHOW FISH'

Firstly, they are probably kept in the house and are part of the family, they talk to them, stroke them; in other words they receive lots of attention. Whereas, you could be shut away in a fish house, where your owner visits you twice a day and what do they do? They gaze into the tank for a while, throw some food in, test the water, do water changes and not once do they speak to you. Let's assume that you are a 'Show Fish'; oh dear me, you are the ones who really do need help. You see, all your owners are really interested in is how big you are growing, have you got nice fins? Good colour and deportment? If so, they can haul you from your nice comfortable home now and again, dump you in a bucket or small tank and drive for miles hitting every pothole en route to some show.

On arrival you are stuck on a bench with lots of other fish, all as unhappy as you. You spend the next few hours having to sit there; it's expected of you that you look happy, when you could be feeling a bit queasy from the bumpy car ride and just want to rest. Not that you are likely to with people sticking their faces on the front of your tank while discussing that perhaps your dorsal fin is just a bit tatty. You want to scream at them that it was alright until they chased you around the tank then caught you in that horrible, rough net; but of course you can't.

Because you haven't eaten for a few days you are weak with hunger and just want to sleep. You can't, because as soon as you start to doze off, this is the time when that species called a 'Judge' decides that he wants to examine you, so to wake you he taps on the glass or moves the tank about. Is that where the humiliation ends, no — he then measures you — but not the whole of your body!!

STARVATION

These humans, who assume that we fish don't have brains, have a strange way of using their own! Think about it from a stupid fish's point of view. To be a good 'Show Fish' we have to reach a certain size. So what do they do before we are taken to a show? They stop feeding us, thereby trying to starve us to death for a few days previously! It appears the reason for this strange behaviour is because those delicate creatures called Judges don't like to see that unthinkable stuff on the bottom of our tank. You see, Judges, unlike the rest of humanity, don't go to the toilet; the Queen does — but Judges obviously don't ...

The next confusing bit is the way they calculate our measurements. How many animals — plants, people, do you know whose measurement does not include the whole body? You see this Judge thing doesn't realise that the head and tail stuck on each end of our body belongs to us, so what do they do? They don't count them in the length of our body measurement! And they call us brainless; amazing isn't it?

There is something else you may like to consider — that breed of humans they call Judges. Those who sit in judgment of us, who spend their time gazing at us to see how many faults they can find. Take a good look next time you're on the show bench.

How many of them would get full points? I bet they don't even have a Norm Size book on that species, if they did there would be a lot of disqualifications! They are all supposed to be the same breed, yet how many would get points on deportment? They are all shapes and sizes, bellies that bulge so much they can't get near enough to see us, so they have to stick those things called glasses on the end of their nose. It's them who should starve themselves for a few days prior to a show.

You may have also noticed that some have got bits missing! That stuff that comes out of the top of their head, it's missing on some of them! On some it even comes out somewhere else instead, like around the mouth. This is entirely a personal view, but I think one of the reasons they don't recognise our heads as belonging to our bodies is because the bits at the top of their heads are missing! I can't answer for the other end of their body, perhaps the reason they keep it covered is because they haven't got a tail! Yes friends, this is the species that sits in judgment on us fish!

BUMPY RIDE HOME

Once the Judges have finished criticising us and awarding points comes the most humiliating time of the day. What happens if you happen to have won Best Fish in Show? Do you feel proud to have had that honour bestowed upon you? Do you hell! You don't even know anything about it because all the credit goes to your owner. They hold the trophies aloft, suck in their bellies and puff out their chest and await the acclaim, while everyone admires that human being for having such a good specimen. They pat them on the back, say "well done" (they don't really mean it because they think their fish is better). You on the other hand are completely ignored and all you have to look forward to is a bumpy ride home with water sloshing around the tank. There is, however, one consolation, once back home you'll be given something to eat!

Nevertheless, it need not be like that. Depending on Mr Mills I could be in a position whereby I could set up an owner training scheme and teach you how you too can train your owner.

We could even start our own union and call it FRASH: Fish Revolt Against Show Harassment. I am, however, open to suggestions for the name of our union, which I might add, also welcomes coldwater and marines.

Mr Mills' Note: *We are indebted to Tarquin for putting forward his view from 't'other side of glass' but thanks must also be given to Nora Green who deciphered his mouthings and fin wavings and put them into words that we humans can understand. Any fish seeking Tarquin's advice on any aspect of human (or fishy) behaviour is cordially invited to drop him a line (without the hook of course!).*

BUY LINES

NEW PRODUCT REVIEW FROM GLEE '97

Discover Pets on your Television

Discover Pets is the new and exciting video series from Rolf C. Hagen (UK) Ltd that is now available. Hagen's own technical team have been involved in all stages of production, from script writing to editing and the narrative in each video offers great amounts of practical advice to help the viewer make important pet selection decisions.

Using an actor family who have been filmed with various pets has meant that the factual and informative narrative in the Discover Pets videos is easily illustrated in realistic terms. The family visit pet stores and make educated and considered decisions in the interests of pet health and welfare.

The Discover Fish video offers an exciting visual guide to selecting the ideal fish community and establishing an aquarium. The undoubted success of this video is that all novice fishkeepers can now explore how to establish an aquarium. All aspects of equipment, water chemistry, planting, stocking and aquascaping are illustrated in practical terms with the video family shown taking each step from consulting reference books, visiting the aquarium shop and installing fishes into the new system.

Also available in the Discover Pets Series are 'Discover Birds', 'Discover Small Pets', 'Discover Cats' and 'Discover Dogs', all of which have been produced by a professional video production company, Video Vision.

These videos have a recommended retail price of £6.99 and are available from all good pet stores.

• For more information contact: ROLF C. HAGEN (UK) LTD, California Drive, Whitwood Industrial Estate, Castleford, West Yorkshire WF10 5QH. Tel: 01977 556622. Fax: 01977 513465.

The new and exciting video series from Rolf C. Hagen (UK) Ltd, called Discover Pets.

INTERPET

Making their debut were new additions to the company's Zooplankton range of preserved foods.

The latest flavours now include Brine Shrimp, Krill and Gnat Larvae. Each comes in 50g jars. The original Zooplankton is also available in 100g jars.

The Bio-Active Natural Pond Care Range harnesses the power of nature to resolve common pond problems without harming wildlife.

Pond Tap Safe contains aloe vera, a 'liquid bandage', to protect delicate wildlife from raw water and also adds necessary bacteria to establish, (or boost) essential pond biological cycles.

Algaway, developed from natural plant extract, creates a pond free from green water and Blanketweed.

Sludge Control is a naturally harmless bacteria that consumes organic waste and as well as reducing pond silt, water clouding and filter cleaning will also consume dead algae when using algae control products.

Bio-Activator establishes a natural toxic waste treatment system by stimulating the ongoing breakdown of toxic waste produced by fish and wildlife and creates essential biological cycles in new, or cleaned out, ponds and filters — particularly useful in Spring.

Disease Control, made from natural plant extract, reduces development of fish and amphibian disease organisms.

The Bio-Active Pond care Range is available in two sizes — 250ml treats a 500 gallon (2,250 litres) pond four times whilst 500ml treats a 1,000 gallon pond (4,500 litres) four times.

The Prime Range of External Filters was completed recently with the introduction of the Prime 30 model (900 litres/hour with 5 litre filter media capacity) and the Prime 10 and 20 models have been upgraded to achieve a 15 per cent increase in flow rate. All models are self priming and a unique flow indicator highlights when the filter needs cleaning. A total filter media system is included — coarse foam, bio media, aqua carbon and polymer wool.

• *Full details of all products from: INTERPET LTD, Vincent Lane, Dorking, Surrey RH4 3YX. Tel: 01306 881033. Fax:01306 885009.*

OASIS

The Vortex Filter is now a well established accessory for ponds and at its inception it was hard to believe the design could be improved. However, OASIS have done just that in their new COMPACT range. When you think about it, there's an awful lot of wasted space once the vortex is up and spinning away the dirt — like the old 'Wall of Death' motorcycle features at fairgrounds all the action takes place round the outside with a gaping void down the middle. In a brilliant design strategy (which must have left other competitors green with envy) they've utilised this space to house the foam sheet mechanical and additional biological filtration sections from the more traditional designs.

Interpet's new Bio-Active Natural Pond Care Range for wildlife pond owners and 'organic orientated' water gardeners.

Water is flung around the circumference first then enters at the top to percolate down through the two media between rising up the central stem and back to the pond again. By the way, if you've just thought of putting a UV Clarifier Lamp down the return tube forget it. Oasis have beaten you to it!

The New Generation range of UV Purifiers is divided into two parts — the basic models include nine, 11, 18 and 36 watt units using the latest Philips longlife single contact lamps which carry a full 12 month life. The high internal reflective coating on the inside of the unit creates a high light intensive reactive chamber. Up to 200 per cent improved efficiency is claimed.

The UV Purifier Specialist range includes three models — 55, 72 and 110 watt are high capacity units which extend the range of the previous range whose features they share.

Aqua Level is a unique way to automatically top up your pond. The floating 'ball-valve' turns on the water as the level drops due to evaporation of syphoning but introduces only small amounts of water to avoid stressing the fish.

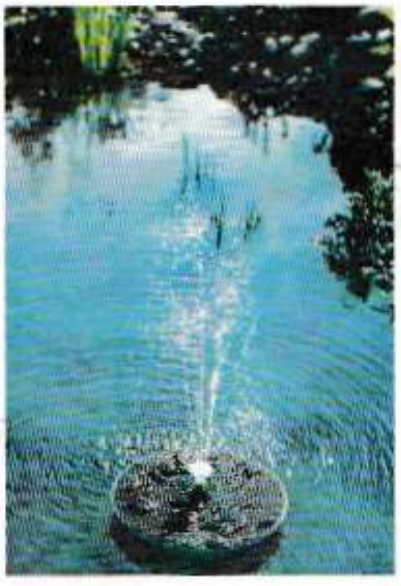
Two devices handy for clearing out the pond are the Pond Weed which is a combined blanketweed collector and dispenser and the Aqua Skim which, when attached to a suitable pump automatically collects all floating debris.

• Full details from: OASIS WATER GARDEN PRODUCTS LTD, Units C1 & C2 Deacon Industrial Estate, Chickenhall Lane, Eastleigh, Hampshire SO50 6RS. Tel: 01703 642268. Fax: 01703 643207.

AQUASOLAR

It doesn't have to sunshine all the way but it certainly helps when using a solar panel-powered pond fountain. The new Aquasolar range, winner of the Best New product Award in the Pet Care and Aquatics section at GLEE '97, features an Pebble Pool, an Indoor Fountain, a Floating Pond Fountain and a Giant Fountain. The output from the pumps range from a modest few inches to 2-3m in height. The solar panels can be floor, roof or pole mounted as required and range from 3 watts to 75 watts. All the pumps operate at a safe 12 volts DC and incorporate a cut-out switch to protect themselves should water levels drop to a low level (very useful for indoor fountains and pebble pools where evaporation can be high — and often unnoticed. An Aquasolar Conversion consisting of a 12 watt solar panel and Ultrasafe pump can be used to convert an existing water feature or even use it to pump water from one part of the garden to another. It should be noted that solar panels cannot be used to run other low-voltage pumps other than those dedicated for the corresponding solar panel.

• Full details from: AQUASOLAR, Lesden House, Barnsley Road, Dodworth, Barnsley, South Yorkshire. Tel: 01226 206157.



Aquasolar's Floating Fountain with built-in solar panel and pump with filter.

LITTLE GIANT

Following on the success of their Sequence Pond pumps the company has looked towards another aspect of water gardening — Piazza Ponds and Fountain Kits. These free-standing water features are just over 12in high (they're based around 12in square glazed ceramic tiles for vertical side decoration) and are octagonal or stretched octagonal in shape. Sizes include 36 gallons for the Gala Piazza Pond, 66 gallons for the Royal Piazza Pond and 93.5 gallons for the Grand Piazza. All feature kiln-dried hardwood frames, ceramic tiles, flexible liner and submersible pump and fountain nozzle.

The Petite Piazza, holding a modest 19.5 gallons, is hexagonal in shape but is otherwise similar in its features. The Barrel-Buddy Fountain Kit is a conversion kit for you to transform any of your favourite patio barrels into a water feature; an extra Tulip Spray Pattern nozzle is included as a bonus.

• Details from: W. T. FURSE, Pump Division, Wilford Road, Nottingham NG2 1EB. Tel: 01159 863471. Fax: 01159 860538.

GREENWAYS

The barley straw syndrome seems to have turned full circle. You may remember that to cure Blanketweed a non-specific 'bale of Barley Straw' was often advocated with no more instructions than that — this often confused people whose ponds were quite probably smaller than a bale!

Following the current trend in Mini-bales being available people with bigger ponds (or mini-lakes perhaps) are needing something more substantial in size. The new Algae Strip from Greenways comes in a 7in width and half an inch thick on a 33ft (10m) roll! Obviously this provides a more economic means of treating larger ponds and cuts out the almost impossible calculations to determine how many mini-bales would have been needed. For smaller needs Pond Pads (7in square) will treat up to 700 gallons and come in a three-pad pack, giving 12 months protection.

• *Details from: GREENWAYS, Southend Farm, Long reach, Ockham, Woking, Surrey GU23 6PF. Tel: 01483 281391. Fax: 01483 281392.*

The Barrel-Buddy Fountain Kit from Little Giant enables you to enjoy an aquatic garden above the ground!

GLASS ART

The Atlantis Power UV comes in three model sizes — UV9000, UV18000 and UV 27000 — capable of treating ponds of 2,000, 4,000 and 6,000 gallons respectively. This new equipment has several features not found in other units: It operates at 12 volts (AC/DC) and has a transformer included, the single-ended, high efficiency lamp has an extended life ▶

BUY LINES

NEW PRODUCT REVIEW FROM GLEE '97

up to two years, relies on a quartz sleeve to protect it and is reported to be 35 per cent more effective than conventional units. A multi pole magnet is also incorporated in the unit to control lime-scale and blanketweed. The unit can be operated either submersible or as a surface unit. The 10m cable length of 12 volt cable does away for the need or armoured cables.

The Atlantis Power UV and Bio Filter unit combines bio-filtration with the low voltage High Energy UV unit and is available in two sizes — for ponds up to 1,000 gallons (5,000 litres) and for ponds up to 2,000 gallons (10,000 litres).

• Details from: GLASS ART POOLS, Durrance Farm Works, Steukley Road, Soulbury, Leighton Buzzard, Bedfordshire LU7 0JU. Tel: 01525 240533 Fax: 01525 240154.

JOHN ALLAN

Everyone is now quite familiar with automatic fish feeding systems but have you ever thought of one for your plants? The AQUA FLUID automatic Liquidoser from Eheim provides exact amounts of fertilizer for a healthy and luxuriant growth of all aquarium plants. Electronic programming give daily exact doses of fertiliser but manual over-ride is possible by pressing a button. The reservoir is transparent for visible level checking and the unit features a two-stage battery warning with safety cut-out system and LCD display and clock function. In addition to dosing plant fertilisers other uses such as any liquid additives could make use of this useful addition.

The fourth, and largest, model of the popular Internal Filter range (those with the useful 'Pick Up' cleaning facility) the 2012 has been added to the range but specifications were not to hand at time of going to press.

The Triple A Aquarium Sets from John Allan are a unique blend of craftsmanship and tradition, coupled with style and flair. The OFI approved units need no polystyrene cushioning and the hinged aluminium lift-off lids are vinyl coated on both sides. Light supports are fitted to take up to three tubes with one light reflector include (two for 15in wide tanks). Plastic moulded twin 'safety' hose channel openings, three pin plug access and sliding cover glasses all make for a quality product and there are still those handy shelves beneath to house the extra vital aquarium equipment.

• Full details from: JOHN ALLAN AQUARIUMS LTD, Eastern Way Industrial Estate, Bury St Edmunds, Suffolk IP32 7AB. Tel: 01284 755051. Fax: 01284 750960.

Watch your plants grow with the Aqua Fluid Automatic Liquidoser from Eheim.

TETRA

The new UV Clarifiers from Tetra make use of high-efficiency, low power consumption m=lamps having over twice the life of ordinary UV units. Each of the four models (9 watt, 11 watt, 18 watt and 36 watt) have universal fittings to take all commonly used sizes of flexible hoses. They come with a 5m cable with fitted plug and are totally weatherproof. Maintenance is easy requiring no special tools and the units ensure clear water when used with a pond filter, particularly the TetraPond PF Filter range, for ponds from 300 to 7,500 gallons, depending on model.

• Details from: TETRA INFORMATION CENTRE, Lambert Court, Chestnut Avenue, Eastleigh, Hants SO5 3ZQ. Tel: 01703 620500. Fax: 01703 629810.

OASE

Visitors attracted to the Oase display by the company's new 'water cannons' which directed lengths of water arching across their pond soon found themselves (with the threat of impending colder weather upon us) in sympathy with the Aqualit Ice Preventer. The sophisticated design pumps water up from the pond's relatively warmer depths to dissipate around a large diameter bowl float thus keeping an area in the ice open up to 30cm in diameter. Two models are available, the larger of which features a two stepped fountain for use in warmer months.

Another product which also works beneath the water surface was the Aquamax Pond Pump. This is designed specifically to deliver dirt from the pond to the filtration system. Operating at less than half the power of a conventional pump with comparable flow rates the stainless steel pump has a large pressure pipe joint and full filter with 8mm grill and is capable of feeding large quantities of water to such features as streams and cascades. Several models are available, models 5500, 8000, 10000 and 15000 deliver 92, 135, 150 and 250 litres/minute, respectively.

You can find out more about Oase products by viewing their homepage on the Internet at http://www.oase-teich.de or, if your German is not up to it by contacting Oase direct at:

• OASE (UK) LTD, 3 Telford Gate, Whittle Road, West Portway Industrial Estate, Andover, Hants SP10 3SF. Tel: 01264 333225. Fax: 01264 333226.

Due to space restrictions some product news has been held over until the December issue of A&P.

SOCIETY WORLD

ASAS Convention

Jack Stillwell reports:

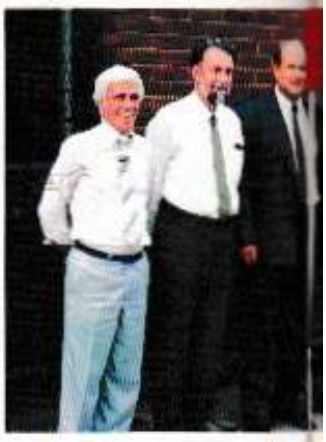
The Association of Southern Aquarist Societies' 4th Annual Convention was held on Sunday, August 17 at the Buckland Community Centre, Portsmouth. The event was sponsored by the Federation of British Aquatic Societies in association with Rolf C. Hagen, Tetra and Aquarian products.

The first of two illustrated talks was given by Stan Langton, a prominent Killifish breeder from the West Country, and proved to be both interesting and instructive.

After an excellent Buffet Lunch prepared by Dawn Slade members took the opportunity to meet the Speakers and the Federation Chairman who was in attendance. Clubs attending included Portsmouth, Isle of Wight, Redhill & Reigate, Eastleigh, Salisbury, Bournemouth, Mid-Sussex and Hounslow; all agreed the event was well worth attending.

The second Speaker was Justin Bell, from Chester Zoo, whose talk on conservation with particular reference to fish and other aquatic animals was well received as evidenced by the many questions asked, and answered, at the conclusion.

After a tea break, Alan Stevens and his Eastleigh



TTAA Aquatic Festival

Jane Bell, Tyne Tees Area Secretary reports:

Sunday August 24 1997 — 07.00 — a dull, grey, still morning in the car park of the Park Hotel at Tynemouth. Surely, once in full swing, the 3rd Tyne Tees Aquatic Festival would not also be dull and grey?

Inside the hotel the traders were busy setting up their Stands. This Festival is well supported by local aquatic traders and this year was also attended by Aquarian in the respected figure of Dr David Ford.

Dr Ford's well-known voice was much in evidence during the afternoon as he organised a regional heat of 'AQUA CHAMP' which was won by Mr Alan Race of WASP. Dr Ford also gave a most interesting lecture on developments in the Waltham Laboratory.

Several amateur fish breeders also attended the Festival, selling a wide variety of home bred fishes.

Local breeders are also able to sell their fish from the Tyne Tees affiliated Society Stands which are scattered around the Festival. These Societies are invited to enter a Theme Tank Competition, the theme this year — an Amazonian Biotope. After judging by Dr Ford, WASP was successful with an outstanding exhibit.

Judging of the FBAS Open Show starts at 11am so exhibitors arrive early. Jaded by the early start necessary to travel from all over the country, they stagger in, weighted down by tanks and boxes containing exhibits for the 38 Classes.

BEST IN SHOW was a Sailfin Characin (Crenuchus spilurus) owned by Bob Street. This fish also won Class 'C' the FBAS Championship Class. The Three Rivers Championship Class was won by T. and A. Cannon with a Spotted Headstander (Chilodus punctatus).

The prizes were presented with his usual charm by FBAS Chairman, Joe Nethersell, who had made the long journey from London, accompanied by Paul Corbett who had travelled from the Isle of Wight.

The successful exhibitors received armfuls of food most generously donated by Aquarian and Tetra.

It was certainly not dull and grey inside the Festival — children's artwork hung on the walls beside Fish Silhouettes to be identified and the Festival's Lojo Barbs to be counted. Hopeful competitors stuck pins in a world map in the 'Where on Earth?' competition.

Snakes from 'Coast to Coast Reptile Display twined themselves around some brave visitors. Glass was manoeuvred into shape in Tank Building demonstrations and everywhere was the main attraction — TESH!

BELOW
Cramlington A.S. stand at TT Festival '97.

BOTTOM OF PAGE
Alec Morrison demonstrates his tank building skills at TT Festival '97.

PHOTOS: S. E. NUTTALL

colleagues auctioned off 53 Lots of fish, plants and aquatic items.

To those members of ASAS who could not attend you missed an instructive and enjoyable day.

Pictured above, left to right: Joe Nethersell, Chairman, FBAS, Stan Langdon, Justin Bell, Jack Stillwell and Peter Furze.

Yorkshire's an Open Book!

With next year's Yorkshire Festival already well into the final planning stage it seems there are many fishkeepers around who do not understand the qualifications required to enter the annual Fish of Fishes competition which is a prominent feature at the Doncaster event to be held on March 21/22, 1998.

Marie Harrop says: "The Fish of Fishes is an event which many aquarists want to get into but, for some strange reason, think they are not eligible because their fish did not win a Best in Show within the Yorkshire area. Like the Yorkshire Cricket Club we also have an 'open' policy and our event is open to anyone, anywhere, whose fish has won a best in Show at any Open Show during the past year leading up to YAF. Of course we do ask that proof is provided (usually in the form of a Best in Show Card) when entering. Incidentally, alongside the Fish of Fishes event, we also have a Best Exhibit Competition in which winners of Best Exhibits at Open Shows such as Pairs of Fishes, Breeders Teams, Plants, etc (why should single fish have all the glory?) can show off their prowess against similar high-class competition."

FBAS AGM Changes Venue

There is an added incentive for Societies' delegates to attend the FBAS AGM on the December 6 1997 for the venue will be no less than the LONDON AQUARIUM. Whilst the meeting proper starts at 2pm delegates may arrive at 1pm and so enjoy a privileged look around London's premier aquatic attraction.

Things would-be attendees should note: the London Aquarium is situated on the South Bank of the River Thames within the Old County Hall building, it is easily reached (only a few minutes on foot) from Waterloo Stations (railway and Underground) or from the north side of the river across Westminster Bridge. Admission to the Aquarium for the AGM Meeting is by FBAS-AFFILIATED SOCIETY MEMBERSHIP CARD ONLY.

You, Too, Can Have A 'Classier' Show

How often have you wondered round the show benches looking for your favourite species amongst the many tanks on view, or even where to bench your own particular entry? Well, there's help on hand.

Very attractive Class Labels have been spotted springing up at FBAS Shows recently. Each Class label has a depiction of a sample entry in the Class (we show here ones for Miniature Aquaria and Plants Classes). These will be issued free to all FBAS-affiliated Societies at the beginning of 1998 for use at their Open Shows and Table Shows. Although those shown are pertinent to FBAS Shows by virtue of their integrated Class Letters, plans are afoot to produce these Class Labels for use at any Open Show where for instance, the Label would simply say, 'Tetras' or 'Barbs' or 'Furnished Aquariums'.

Each Class label measures 6x4in, is double-sided for viewing from almost any direction and is fully laminated to protect against water damage. A special holder is also available and the labels come in sets of 30. It would be possible to produce Labels to specific orders for specialist Shows.

Full details available from: Class Labels, Cham Jing, 28 The Mall, Binstead, IOW PO30 3SF.

NGPS Annual Open Show '97

David Ford reports:

No less than 250 Fancy Goldfish could be seen at the Northern Goldfish & Pondkeeper Society's annual show at the Trinity United Reformed Church hall at Altrincham, Cheshire, on Saturday, September 27.

The Club has been running since 1959 and they meet every second Tuesday at 8pm at Highfield Hall, Highfield Road, Farnworth, near Bolton. Members are devoted to keeping, breeding and showing Goldfish, both Fancy and Pond varieties.

Their Annual Show is held every last Saturday in September in the Church Hall on Delamer Road is well worth noting in your calendar. As their Chairman Sheridan Moores states: "Here, at one of this country's top Goldfish Shows, you will see a display of rare top quality Fancy Goldfish unsurpassed anywhere in the world."

The Show is supported by Aquarian and their consultant Dr David Ford handed out the prizes. The winner of the Best in Show was Alan Radcliffe with a London Shubunkin and the highest pointed winner was Tony Roberts, both of whom are members of the NGPS.

If you like Goldfish and live in the North of England do join the ranks of this active Society — attend the monthly meeting or for more details ring the Chairman on 0161 969 7567 or the PRO on 0161 748 4835.

NGPS Results — Open Show, September 27, 1997:

The following gained a first in each class.

P. Coyle — Common Goldfish under 3in; J. Reese — Common Goldfish over 3in; S. Moores — Comets under 3in, Metallic Fantails, Celestials, Pom Poms, and Bubble Eyes; A. Ratcliffe — Comets over 3in, Lionheads; D. Smith — Bristol Shubunkins under 3in, P. Davies — Bristol Shubunkins over 3in; R. Duckworth — Calico Veiltails; A. Roberts — Metallic Veiltails, Orandas; R. Slades — Moors, Broad Tail; R. Williams — Calico Fantails.

In addition there were Breeders' Classes, Best Colour, Best in Show, etc, a total of 39 classes now judged to the Nationwide Standards for Goldfish Varieties.

DIARY DATES

NOVEMBER

4 Gloucestershire A.S. Bell & Gavel, Cattle Market, St Oswalds Road, Gloucester. Subject to be announced. Contact Andy 01452 372948 or Christine 01242 520476.

15 GSGB. 2.30pm. Meeting of the Goldfish Society of Great Britain, YMCA, Barbican, London. Subject: 'The Serious Beginner, Part 2 — The Fish', by John Parker. Further details from the Membership Secretary, Roger Saltrick, 0181-550 1852.

SOCIETY WORLD

OPEN SHOWS

(Rule Codes: A = A of A; FB = FBAS; FN = FNAS; FS = FSAS; I = International Goldfish Standards; N = NEFAS; U = US/A; Y = YAAS)

31 October/2 November Supreme Festival of Fishkeeping, Weston. 1 November National Junior Fishkeeping Open Show (FB). 2 November Supreme Championship & Open Show (FB)

1998

8 March NEFAS Open Show

21/22 March Yorkshire Aquarists Festival, Doncaster

30/31 May Fishworld '98, Dunstable

SOCIETY MEMBERS

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FASCINATING FISH FACT

A Convict in Cuckoo's Clothing

Should the Convict Cichlid be called the Cuckoo instead? It's been discovered that single parents will do their best to offload their offspring onto other parents. A fish that has lost its mate faces an impossible task if it tries to protect a brood on its own. By swimming right into a neighbouring convict's territory and abandoning the fry amongst another brood the young fish gain the protection of a pair of adults. The foster parents seem happy with this arrangement so long as the additional fry are smaller than their own. Apparently smaller fish are the first to be picked off by predators so most losses are likely to be from the adopted brood. The new parent's own fry also benefit from increased safety in numbers.

By LINDA LEWIS