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AQUARIST AND PONDKEEPER

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EDITORIAL

'O' IS FOR OPTIMISM . . . AND OFI (UK)

It's nice to be able to start the year on an upbeat note. I went to an Ornamental Fish Industry (UK) meeting in November at which representatives of the Ministry of Agriculture, Fisheries and Food, CITES, and Dr Keith Bannister, who had just completed a survey for the RSPCA, were all due to speak. Nothing world-shattering in this, you might think . . . and you might well be right, were it not for the fact that such an assemblage would have been quite unthinkable some years ago.

As I sat through the proceedings, I couldn't help remembering an Ornamental Fish International meeting I had attended in the early 1980s in Miami. The then secretary had put me fairly and squarely on the spot by asking me, quite unexpectedly, to repeat to the meeting what I had said to him on the 'plane the day before.

Basically, my point was that it was far better to be 'proactive' than 'reactive', and that I felt it would enhance OFI's reputation, in the face of quite aggressive and (in my view) largely unjustified pronouncements from conservation and animal welfare bodies of the time, if OFI were to issue regular press releases outlining its own internal bans and regulations on imports, its code of practice, and so on.

After the meeting, I was told by more than one person that I was being simple-minded and that there was very little likelihood of conservationists ever being willing to lend an objective ear to any positive moves on the part of the industry.

How different the mood was in Northampton this past November. There we were, conservationists, animal welfare representatives, ministry 'officials', members of the industry, representatives

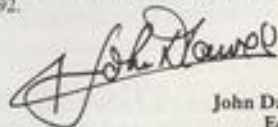
of aquatic societies, and me — probably still just as simple-minded in some people's eyes and still just as optimistic — all in the same room . . . talking to each other. And, as far as I could make out, there was no hostility of any kind, despite the fact that the road ahead for the industry looks bumpy.

There's going to be a lot of straight talking, and some of the outcomes are not going to please everyone, but the fact remains that 'officialdom' is becoming ever more aware of the aquatic industry's commendable efforts and progress over recent years, and that the avenues of communication are now far more open than they've ever been.

To anyone who was attending an OFI meeting of any kind for the first time, things might not have looked or sounded particularly 'over-positive'. To those of us who have witnessed the, at times, painfully slow progress that has taken place over the past ten years, the November meeting was indeed 'optimistic'.

Let's just hope that the positive momentum created there gathers pace in 1992. Time is short and OFI (UK) needs all the help it can get. So do yourself and the hobby a favour and lend your support. Ring Keith Davenport on 0234 355315 for membership details.

Here's to a successful 1992.



John Dawes
Editor

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England: Green and Pleasant or Grey and Complacent?



Jason Endfield was greatly surprised by what he found in Warsaw . . . and is dismayed at what we don't find over here.

On my trip to The Netherlands some months ago, I was totally and pleasantly surprised by the amount of aquatic life in the canals and waterways of that heavily industrialised country. In a recent *A&P* feature I described this abundance and called for improvements in the waterways of England. But, after all, I thought, that was Holland — crisp, clean, sophisticated Holland. Naturally, there would be no pollution problems there, and yes, of course, their canals would be buzzing with life.

Holland was, surely, the exception to the rule, and I was pretty certain that, in truth, England was as 'green and pleasant' as most other modern countries. So, despite some concern about our environment, I was content to sit back and be complacent.

My illusions were shattered recently on another European trip; this time I stayed in this particular country's capital city, seven floors up in an apartment overlooking a river that the locals told me was, they thought, a little polluted. Yet, this polluted river was quite something. At night, I was kept awake by the croaking of thousands of frogs — the noise was really quite startling, especially when I remembered that I was seven floors up.

The country was Poland and this was downtown Warsaw. Poland is extremely civilised and sophisticated and, what's more, abounds with wildlife; Warsaw's Vistula River teems with fish, and there are these frogs, well — everywhere . . . and this is a country that we are told has serious pollution problems (I don't know who started this rumour, but whoever it was certainly hasn't been there!). I can tell you — we should be examining our own country very closely — something is very wrong with our environ-

ment when hardly any of our inner city rivers and waterways hold life.

My experience in Warsaw was a real eye-opener, first of all, because it is a terrific place and, secondly, because of the abundance of wildlife, especially aquatic life, in the heart of a big, busy, cosmopolitan capital city. The frogs were my biggest surprise. In my part of England, it's a major event to spot a frog, even in the park lake, yet, in the Vistula, it's impossible not to encounter them.

Indeed, if it weren't so novel to me, their constant nighttime singing could have been described as a nuisance; and in Warsaw at least, where there are frogs, there are fish. As I said earlier, the Vistula is full of them. In fact, I broke with one of my longstanding 'principles' of not eating fish unless it was finger-shaped, and I accepted a dinner invitation to sample some freshly caught Pike and Roach; they were delicious . . . Well, so much for principles!

The tradition of fishkeeping in Poland is not so well established, though pets in the city aren't so popular generally because of lack of space. That said, however, I did see Red-tailed Sharks and various species of barbs for sale in a small Warsaw pet shop, so fishkeeping does exist, and I, for my part, left some copies of *A&P* to show some encouragement!

But, despite domestic fishkeeping not being in the top ten list of Polish pastimes (Vodka and smoked sausages top the charts), there is a definite interest in things aquatic.

I spent a day in the beautiful English-style Łazienki Park in Warsaw. It's a lovely park full of delightful surprises like frighteningly tame Red Squirrels that seem to crave human contact, and a distinct and refreshing lack of litter, but one of my biggest (literally) surprises had to be looked for in the exquis-

ite waterways surrounding Łazienki Palace.

Vying for food with the ducks were the most enormous carp I've ever seen. This is going to sound like the classic fisherman's tale, but I'll swear that they were, some of them, over three feet long. I thought I had some photos to prove it, but in true Loch Ness monster style, I have a collection of 'water and duck' compositions with a hint of orange colour shining through the water where the giant fish were. Honestly, they are incredible.

These fish must have been of a very great age, though my Polish friend told me that every few years they are caught and sorted. Presumably, these specimens (I saw about six very large individuals) are left to adorn the beautiful ponds, lakes and channels that surround the breathtaking palace.

As I found on my excursions in The Netherlands, these waters were not 'clean'; they smelled and were murky — and yet the fish therein thrived as they had seemed to in Holland's canals; so again, I found myself asking just what was so different about continental waterways and those in England (at least industrialised England) which support considerably less life.

Once again, my answer seems to be that there is an attitude of complete indifference in England, where we, as individuals, seem to litter our country without concern, and where our big industrials pollute the environment with an appalling aloofness. We've still got some of the most beautiful countryside in Europe without a doubt, but it is fast disappearing under the weight of litter and pollution from industry.

It's depressing indeed to note that, even in Eastern Europe, where we are told they have terrible environmental problems, there is more wildlife, including a thriving aquatic wildlife, than one could possibly hope to see in England. True, venture into some parts of rural England and it can be found, surviving against all the odds, but look at our cities and they're dead; our inner city rivers are like chemical and litter dumps. It seems to be an accepted fact that they are like that; indeed, when a salmon was caught in the Mersey a few years ago, it made headline news! Yes, that's funny — but so very pathetic.

From Amsterdam to Warsaw, and probably in many other cities in between, it would be impossible for the locals to imagine their rivers devoid of life. It seems that both individuals and industry in these places have more respect for their environment than to let it happen.

It's a sad fact, but very soon we are going to be known as the 'Dirty Old Man' of Europe, with mere memories of our 'green and pleasant' land that was.

OK — I have made it sound worse than it is (at the moment). Sure, we still have some great countryside where there are rivers full of life, and yes, there are even some frogs still in the park lake; but it's clear to me that, without a concerted effort, it could all disappear very soon.

Well, I for one, won't be happy until Mersey Salmon are commonplace — no, heck, not just salmon in the Mersey — why stop there — giant Polish Carp too!

Tomorrow's Aquarist

By David Sands



HAPPY NEW YEAR TA READERS!

Here we find ourselves already. 1991 was a reasonable year for me and many TA readers — it slipped by so fast. I met the lovely Louise at the Supreme Fishkeeping Weekend, Weston-super-Mare (that is, one of our regular TA letter contributors, Louise Lilywhite, of Longbarn, Common Lane, Ditchling Common, Nr Hassocks, Sussex), and we talked about fishkeeping, working in an aquatic retail establishment, the way fishkeepers dress (or not as is often the case) and indie music.

Andy Duck, infamous Northern carberend, sitting at the Aquarian Advisory desk — waiting for a reply to his question "What is the answer to the Universe?", asked Louise and me: "What's wrong with string vests and jeans?"

Louise is an active member of Mid Sussex Aquarist Society — which is currently celebrating its Silver Jubilee — and she says her society willingly encourages young fishkeepers.

In a wonderful conversation she admitted that John Smith, the chairman of Mid Sussex, had encouraged her to become involved in the club and the show

side. John helped her travel and suchlike... many clubs around the UK will help TA readers if they would only visit meetings and say they are interested in fishkeeping.

Louise thinks this section of the AGP should be two pages and I might add that she is not the first to say so! I am hoping a picture of Louise and I will be ready in time for February's TA.

FOOTBALL FISHY

Robert Glennie writes from Christchurch in Dorset to say he's a Southampton supporter (remember I said that my fish supported Blackburn Rovers?) Robert says that "Southampton are hiding somewhere at the bottom of the first division, but I like my catfish best of all... can you see the connection?" He goes on, "My fish show no interest in Southampton, but who can blame them?"

Well, if they had Keany Dalglish as manager (Robert's fish and Southampton) — they would be much more interested... Robert enjoys attempting to make his fish tanks as natural as possible and likes articles

relating to fish habits.

He asks how big *Synodontis nana* grow in aquaria. Consulting Volume 2 of my own 'Catfish' book, I can say that *nana* grow to about 10 inches (25cm), perhaps larger in nature.

Simon Parker, another regular to this column, writes to say how pleased he was to read that one of his London Zoo pictures would be featured in TA. (I told you it was *Done!* Fix It...)

Simon writes about *Plesiosaurus*, the old fish-eating Dinosaur that many readers mixed up with my tricky little quiz about the Loch Ness monster. As well as fossils found in New Zealand, Simon writes about its pointed teeth and very long neck!

WORK EXPERIENCE

I'm waiting for aquatic establishments to write in saying they have a place for a TA reader. Each one that writes in will be listed in TA and a picture of the shop and TA reader will be published (hopefully in the same shot). Louise was telling me at Weston-super-Mare how she enjoyed her time in the aquatic shop.



William Robert by the pond at Nethor Kellie near Carnforth. Has any TA reader seen an unusual pond? A prize awaits any TA who can send in a photo of him or herself by an unusual pond.

I think it is worthwhile to offer a place to TA readers with a real interest in fishkeeping. Not every person will be suitable of course. Stan Kemp at Kingfisheries, in Beckenham in Kent (see last month's TA) told me that he had successfully offered places for work experience several times.

IT'LL BE ALWIGHT ON THE NIGHT

The Isle of Wight Aquarists' Society organise an Isle of Wight Weekend Experience every year at Whitecliffe Bay Holiday Park at Bembridge. This year, on 13 and 14 June, I will be manning the Aquarian Advisory Stand and lecturing on my 1990 expedition to Peru.

The organiser, Paul Corbett, asked if the Open Show day (on Sunday) could have a special class for youngsters under 16 to be rather aptly named the Aquarist & Pondkeeper 'Tomorrow's Aquarist' Class.

I will publish a picture of the winner and, hopefully, the winning fish in a future TA column and, perhaps as Paul suggested, the AGP can throw in a year's subscription... (*Done!* Ed).

Any readers interested and wanting the full rules should write to Paul at The Orchard, Gatcombe, Isle of Wight PO30 3EF.

There is also a Best Painting 'fish or aquatic scene' competition for under eights and under thirteens...

Finally, subjects for the New Year with competitions to follow: TA Pen Pals, Showing Fish (is it wrong is it OK for some species of fish and not others?) and Favourite Fish.



Of Pigs and Horses

By Alex Stephenson

Alex Stephenson (alias Darius in recent *Coldwater Jottings*) begins an occasional series of personal insights into aquarium and pondkeeping.



A very happy and prosperous 1992 season to all fellow *AGP* readers. My name is Alex Stephenson, a fact which probably means absolutely nothing to you! There is no reason why it should. I am not famous or anything; I am a very keen fishkeeper, though!

It all began about forty years ago with goldfish, followed soon after by all sorts of tropicals — some successful, some not. In the last few years, I have returned to my first love which is Fancy Goldfish; not everyone's cup of tea, I know, but I like them.

The esteemed Editor of this magazine (*Flanzer/Ed.*) has invited me to produce an occasional article, so, with some trepidation, I will try to amuse you and, hopefully, give you some food for thought.

It must be stressed that the views I express are from my own observations. In other words, they are personal opinions. You won't always agree with what I say of course, but this is as it should be.

It isn't my intention to write about goldfish in particular, although they are bound to creep in. The subjects are likely to be more varied and general in nature, and hopefully thought-provoking. Try this one and see what you think.

The freshwater tropical community tank is still a very popular form of fishkeeping; very many hobbyists started this way, sometimes with great success. We all know that the interest can become permanent, as many specialist fishkeepers and breeders still maintain one or more communities.

This is not surprising, of course, as these set-ups offer enormous scope for personal choice. Some of the better tanks are almost a

work of art, while still being suitable homes for living things.

There can, however, be problems peculiar to mixed communities which are not easily explained. For example, every experienced fishkeeper knows that there are times when certain fish don't do as well as they should, never reaching anything like their potential.

Assuming all the obvious possible causes have been explored and ruled out, we are left with the fish themselves. Perhaps the combination of tankmates is wrong. Aquarium keeping is not, after all, just a matter of keeping the predators away from the non-predators, or the shy away from the 'party goers'... I think there may be more to it than that.

Let me explain. There are more species of freshwater fishes in the world than there are mammals, and the differences between these species can be just as great. For instance, a Rosy Barb may be as different from a Rosy Tetra as a cow is from a fox. They may put up with each other's company, but have little in common.

There are, however, very different animals that seem to enjoy each other's proximity, zebra and wildebeest, for example. On a domestic scale, rabbits and guinea pigs get along fine. Alternatively, there are many animals that tolerate only their own kind. Some, in fact, don't even go this far, remaining solitary, except for breeding. In other words, every species of mammal has its own lifestyle. The same is just as true for fish.

Further examination shows that it's not unusual to keep horses with cows, horses with sheep, or horses with goats. But it is not normally successful to keep horses with pigs. There will always be the rare exception, but

given the choice, these two animals will avoid each other.

I am sure there must be similar preferences among fish. Many fishes are very adaptable, of course, and it is this ability to adapt which has ensured their survival and makes it possible to keep them in captivity.

A fish's senses are quite different to ours, though, their sense of smell being greater than anything we can imagine. Their equipment for sensing sounds and vibrations is also completely alien to us, and so totally beyond our comprehension. It isn't surprising then, that we are ignorant, and mostly unaware, of what goes on in a fish tank.

Every living thing gives off scents, just as every living thing gives off vibrations. These scents and vibrations not only vary between species, but also between individuals. Furthermore, they even vary according to the different activities of individuals. The probability that some fish species find the smell and activities of certain other species distressing is therefore very likely. In some cases it will amount to mild annoyance. In others, it seems they would rather die than put up with it.

Most experienced fishkeepers would agree that some fishes only do well in a single-species tank. In fact, a comparison between specimens from a community and a single-species system can be quite remarkable.

This is an experiment anyone can try if they have a spare tank. Obtain a number of fish from the same source, at the same time. Put half in the community tank and half in the new 'one-species' tank. One of the first observations is likely to be a difference in behaviour pattern between the two groups. Other differences, such as growth rate, colour and so on, will develop in due course, depending on the species chosen.

You may, by now, be under the impression that I am against community set-ups. This is not true. I do, however, have reservations about some set-ups I have seen. Remember, fishkeeping is something we do for pleasure. If we can't make life pleasant for our fish, then we have failed. A community tank is always a compromise, and it is the fish that have to do the compromising. To make life worthwhile for them we have to do our homework.

There is no substitute for study. Take advantage of the work done by others through reading as much as possible, then back this up with your own observations. Many of the best fishkeepers spend much time just watching. However, this time has been known to cause friction within households, so try not to get divorced over it! Better still, where possible, involve partners; their keen support should never be underestimated.

Above all, remember, fish species are not just variations on a single theme; they are all very different. So, try to avoid keeping pigs and horses together!

My favourite: *Fish*

New Series



ROY SCOTT

A & P editor John Dawes launches our new occasional series on personal favourites with what, at first sight, may appear to be a most unlikely choice.

Photographs — unless otherwise indicated — by the author

Some people call it mean; some call it vicious; others refer to it, quite simply, as a killer. Voracious, cannibalistic, insatiable, aggressive and evil are just a few of the many other terms that people have used to describe this fish. With labels such as these, you wouldn't think that any creature could stand even the remotest chance of being anybody's favourite, would you? Well, you would be wrong...

The Mosquito Fish does have some friends in the aquatic world. Admittedly, there aren't hordes of aquarists shouting its praises, but those of us who do like these diminutive fish, see in them some very special qualities indeed.

OUTSTANDING QUALITIES

The Mosquito Fish (at the moment I'm using the singular, but see below under **Classification**) is one of the most 'versatile' fish you could ever hope to come across.

It is, for a start, by far the most widespread of all nineteen Poeciliid fishes that are known to exist as wild, reproducing populations in locations outside their original



My very first Gambusias came from this pond in the Alameda Gardens in Gibraltar way back in 1952.

ranges. It is now found in every continent except Antarctica, and may well be the most widely introduced fish in the whole world.

As its common name indicates, this species has been repeatedly introduced into non-native waters to control mosquitoes and, thus, the spread of malaria. It is known to have an almost insatiable appetite for mosquito larvae and pupae. Unfortunately, it has the same appetite for anything that is small enough to be swallowed, including young fish.

This means that its introduction into any area soon results in a fast increase in its numbers, accompanied by a corresponding decrease in the native population. The problem is compounded by the fact that the Mosquito Fish is very aggressive; it will nip the fins of larger fish, often to the point where they are so weakened and harassed

that they succumb to infection and eventually die.

Therefore, while the mosquito-controlling abilities of this predator may be considerable, its overall ecological impact must be regarded as negative, especially since most fish species affected by the introductions would, in any case, themselves feed on mosquito larvae and pupae.

Reports of Mosquito Fish introductions abound, ranging from Canada, part of the United States outside its usual distribution (Mississippi River basin to Iowa, and coastal drainages of the Gulf of Mexico, down to Veracruz in Mexico and the Atlantic slope up to New Jersey), to Japan, Egypt and most of Europe. In addition, I have collected this species in locations as widely separated from each other as Madeira, Gibraltar, south-western Spain, Singapore and Malaysia.



Gambusia holbrooki trio collected in the early 1980s in the same pond from which my first specimens had come some thirty years earlier.



Collecting *Gambusia holbrooki* — which the locals referred to as 'sardinhas' (sardines) — from a pond in the centre of Funchal, Madeira, in November 1983.

Now, a fish that can exist and reproduce in such a widely varying range of habitats, some of which are even brackish, is pretty special in my book. As if its powers of adaptability were not enough to raise it above most others, its body is a remarkable piece of biological engineering. Sleek, with upturned mouth, bright eyes, cryptic coloration that makes it difficult to spot both by predator and prey alike, and a devastating turn of speed, make the Mosquito Fish the perfect predator of the world that lies just below the surface of the water. This fish is a survivor *par excellence*.

CLASSIFICATION

Traditionally, Mosquito Fish have been regarded as two subspecies of the species *Gambusia affinis*, namely *G. affinis affinis* and *G. affinis holbrooki*. Recently, however, research carried out in the States by Wooten, Scribner and Smith (*Copeia*, 1988(2), pp 283-9), has shown that hybrids between the two nominal subspecies tend to be deformed or die an early death.



The fulfilment of a life-long ambition: a melanic *G. holbrooki* male collected in Tampa, Florida, in March 1989.

In addition, there appear to be other reproductive barriers between the two types. When this is then added to differences in genetic variability and other factors, it is hard to resist the argument that we are, in fact, dealing with two separate, very distinct, species: the Western Mosquito Fish (*G. affinis*) and the Eastern Mosquito Fish (*G. holbrooki*) whose main characteristics in terms of distribution, aquarium requirements, etc, may be summarised as follows:

1. *Gambusia affinis*

Synonyms: *Gambusia affinis affinis*, *G. speciosa*, *G. gracilis*, *Heterandria affinis*, *Zygonecetes atrilanus* and others.

Common name: Western Mosquito Fish.

Range: Rio Panuco basin, northern Veracruz in Mexico; northwards to southern Indiana and east to Alabama, including Mississippi drainage system and Texas. Numerous exotic populations established elsewhere.

Overall size: Males 3-4cm (1.2-1.6in); females 5-7cm (2-2.8in).

Water requirements: wide range of chemical conditions tolerated. Temperature tolerance from near-freezing to over 30°C (86°F).

Preferred diet: Largely carnivorous, but will accept virtually any other food offered.

Breeding: Wide range in size of broods, from as few as 10 fry to around 80, produced every 5-8 weeks.

Notes: All populations west of Mobile Bay in Alabama should now be regarded as *G. affinis* according to Wooten and his co-workers. All populations east of this locality should be regarded as *G. holbrooki*. Taken together, both species almost certainly have the widest distribution of any fish in the world.

2. *Gambusia holbrooki*

Synonyms: *Gambusia affinis holbrooki*, *Heterandri holbrooki* and others.

Common name: Eastern Mosquito Fish.

Range: From Central Alabama east to Florida and northwards along the Atlantic coastal drainages up to New Jersey. Numerous exotic populations established.

Overall size: Males 3-4cm (1.2-1.6in); females up to around 7cm (2.8in).

Water requirements, diet and Breeding: As for *G. affinis*.

Notes: *G. holbrooki* males have a tendency towards melanism (either exhibiting black spots or being totally black). Ray 3 of the gonopodium carries denticles (small teeth), while the corresponding ray in *G. affinis* is

smooth. Ray 4p has a short, unsegmented claw in *G. holbrooki* and a long segmented one in *G. affinis*.

'FAVOURITE' REASONS

Gambusia affinis and *G. holbrooki* are much maligned by ichthyologists and aquarists alike because they are super-efficient destroyers of native species. I cannot dispute this, of course. Yet, despite my abhorrence of the devastation caused by the ill-advised introduction of exotics, I cannot help having a huge soft spot for Mosquito Fish.

It all goes back to when I started keeping fish in 1952. I was only seven years old at the time. Having been born in Gibraltar, surrounded by the Mediterranean Sea on three sides, it is hardly surprising that I grew up with a passionate love for all manner of aquatic creatures.

Imagine my delight when my father arrived home one day with a bagful of 'wild Guppies' which the then superintendent of Gibraltar's Alameda Gardens had given him especially for me. I immediately took to my new charges like the proverbial duck to water... even though they were Mosquito Fish and not Guppies.

In a flash, the fish were dumped into an old all-glass battery tank which distorted their appearance somewhat but, nevertheless, afforded me a close-up of these little jewels, the likes of which I had never experienced before. Everything about them fascinated me: their streamlined shape, the

sneaky way the males crept up on the unsuspecting females, the almost-brutal way they attacked their food, the rainbow-like reflections of their gill covers when the sun's rays hit them at just the right angle...

And then there was the excitement of seeing the females give birth. I used to place the pregnant females in a white enamel wash basin and wait, net in hand, for the babies to drop. Sometimes I would get to the baby first and manage to scoop it to safety. Sometimes the mother would be too quick for me, turning round and gulping down the newborn fry before I could get my net in the way.

These were my formative experiences in fishkeeping — intense, heartbreaking (when I failed to save a baby), exhilarating (when I managed to do so)... and always, but always, magical. Little wonder then, that those early, close encounters of the *Gambusia* kind, have resulted in a life-long 'affinity' (forgive the pun!) with both *G. affinis* and *G. holbrooki*.

Little wonder, also, that wherever I go, if there are *Gambusias* around, I'll (at least) go to see them. And little wonder, too, despite my love of all aquatic creatures, in general — and of a few species like *Skiffia francesae* (the Sawfin Goodeid which is now extinct in the wild) and *Trichogaster trichopterus* (the Three-spot Gourami, whose genetics of colour inheritance I once attempted to fathom out), in particular — that that very special, exclusive, 'favourite' spot goes to a tiny fish that so many other aquarists won't even give a second thought to. They don't know what they are missing!



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A GENEROUS GIANT

It just 'grewed' and 'grewed' . . . well, almost so, in the case of Fred Campbell's Giant Hygrophila.

It can often be gratifying, and perhaps necessary, to plough a little of our outlay back into the hobby and, in my experience, the propagation of aquatic plants offers the quickest and least troublesome way of obtaining some reward for our efforts. There are many plants which can be utilised to this end but, for sheer speed of reproduction under certain circumstances, the obliging habits of Giant Hygrophila (*Nomaphila stricta*) place it high on the list.

ADAPTABLE PLANT

It was a favourite of mine for a long time, but only once did I discover its true propensity. The Giant Hygrophila is not a true aquatic plant, its native environment being the bogs, swamps and rice fields of the Indo-Malay Archipelago, but it will adapt itself most engagingly to fully submerged conditions in the aquarium.

The initial impulse of the plant is for the main stalk to thrust itself upwards as quickly as possible, any subsequent side shoots being apparently incidental.

A single cutting will soon take root and the tip of the stalk will quickly break the surface of a 12-inch (30cm) deep aquarium. It can then be nipped off and re-planted to repeat the process, while the original plant will send out new shoots from the base, eventually forming a bushy plant, which can be split into two or three individual ones.

The continuation of this process curbs the plant's natural tendency to spread large leaves over a wide span, resulting in a compactness of growth with smaller and neater leaves.

GROWTH EXPERIMENTS

Under these circumstances, I often wondered how it had come to be known as 'Giant' Hygrophila instead of by its correct scientific name, *Nomaphila stricta*.

Experiment No. 1

Anyhow, I decided to try a little experiment. I knocked the end out of a 16 x 8 in (c40 x 20 cm) tank and glazed the top, standing it upright on what had been one

end, to take a plant. I then selected a specimen which was just breaking the surface of the water and planted it, in about 3 inches (c 7.6 cm) of a well-known potting compost, in the same depth of water I had taken it from. I also kept it at its accustomed temperature.

It grew 5 inches (12.7 cm) in a week and the leaves above the water grew larger and took on a deeper shade of green. The plant was on a high shelf and was touching the roof, so I lowered it on to a stool.

In about a month, it had reached the roof again and measured over a yard (> 90 cm) in height and its branches spanned some 2½ ft, (76 cm) making it difficult for me to move around freely in my 7 ft by 5 ft (c 2 x 1.5m) fish house.

In desperation, I placed it on the floor at the far end where, without going to a lot of trouble, I could not heat it. As it was July, though, I decided to leave it. The growth rate slowed down, but almost immediately it began to produce clusters of small flowers of

a delicate shade of purple and continued to do so until the end of the summer.

When it again reached the roof, its overall height was 5 ft (c 1.5m) and it measured 4 ft (120cm) across, so, not wishing to take up any floorboards, I decided that the experiment must end.

Experiment No. 2

Simultaneously, I had been treating another of its kind as one would treat a house plant, keeping the roots moist by standing the pot in about an inch (2.5 cm) of water.

This did not grow so rapidly in height, nor did it flower as profusely, but produced more shoots from the base and eventually formed a more compact and bushy plant than the other one.

Experiment No. 3

I nipped off all the growing ends from both plants, together with all the young shoots which were sprouting from the lower branches, and planted them fully immersed. There was enough to fill three 24 x 12 x 12 in (60 x 30 x 30 cm) tanks, all produced in 8 months. The cuttings quickly adapted to the aquatic conditions and were soon sending out the smaller emerald green leaves characteristic of the plant when fully submerged.

CONFUSING NOMENCLATURE

Perhaps it is due to the plant's remarkable adaptability that some confusion appears to exist in the literature as to its name. I have seen it referred to as *Nomaphila stricta*, *Hygrophila corymbosa* and even *Hygrophila stricta*. I believe the first of these is the one currently in use for this remarkable, 'generous' giant.



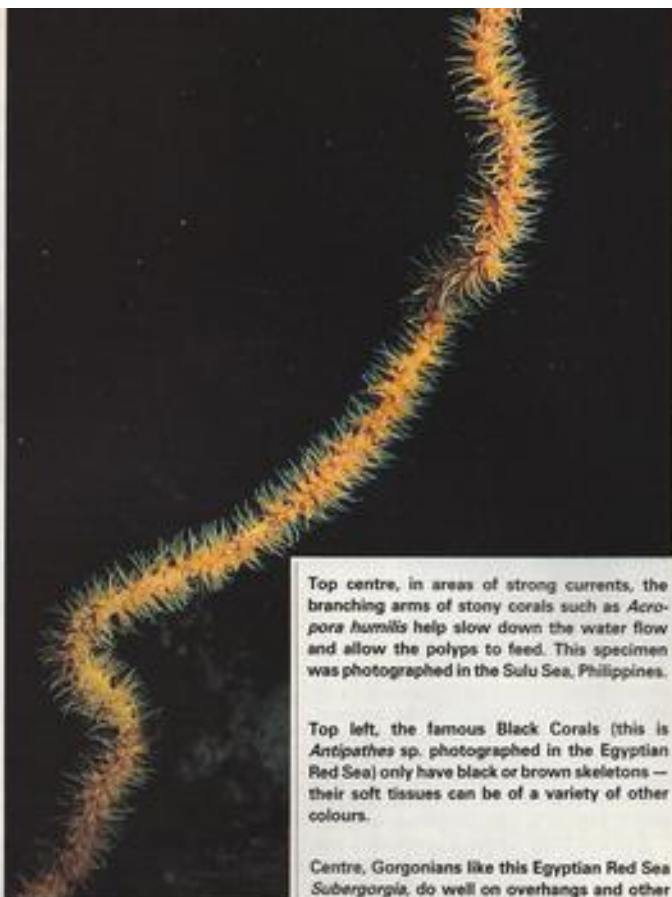
The submerged form of the Giant Hygrophila gives no indication of just how tall this plant can grow.



THE SECRET LIFE OF



Left, *Sarcophyton* sp., a species of soft coral photographed feeding at night. Right, Zoanthids are colonial anemone-like animals which are often confused with corals. This species — photographed in the Sudan Red Sea — belongs to the genus *Palythoa*.



CORALS *Part 2*

Jack Jackson completes his overview of corals, their characteristics and the threats to their continued existence.

Photographs by the author



The coral make-up of a reef is constantly changing. Storms, fresh-water floods, predation, sediment and changes in currents, sea levels or water temperature, can kill off some corals; faster-growing species may block out the sunlight falling on others; Table Corals may snap under their weight. Add to this the damage caused by our own species, and you can see why many reefs are under pressure.

Reefs also change in character between tides. For example, corals exposed to air during low water or summer evaporation, secrete a heavy mucous coating which helps to prevent dehydration. This is later seen as an oily slick floating away on a rising tide.

COMPETITION

Many different species compete for the best areas between the surface and 30 metres (c.100ft) and these have evolved methods that enable them to defend their living area or to expand at the expense of other species.

In areas of strong current, corals that have many branching arms are the most prevalent, their shape slowing down the water flow over the polyps, thus giving them more chance to

Top centre, in areas of strong currents, the branching arms of stony corals such as *Acropora humilis* help slow down the water flow and allow the polyps to feed. This specimen was photographed in the Sulu Sea, Philippines.

Top left, the famous Black Corals (this is *Antipathes* sp. photographed in the Egyptian Red Sea) only have black or brown skeletons — their soft tissues can be of a variety of other colours.

Centre, Gorgonians like this Egyptian Red Sea *Subergorgia*, do well on overhangs and other locations not ideally suited to stony corals.

Above, this is a close-up of Black Whip Coral (*Cirripathes anguina*) polyps feeding at night in the Sudan Red Sea.

catch prey. *Acropora*, (Staghorn) corals, have more species, grow faster and occupy more reef area than any other species.

When some corals detect a competing coral nearby, they grow extra-long tentacles in that direction, with a higher concentration of nematocysts (stinging cells). These tentacles wave about in the direction of the intruder and kill it when they touch it.

Over distances of less than 2 centimetres, some corals can even open a hole in their body wall and send out digestive filaments, which can attack an intruder.

PREDATION

Coral reefs give home and shelter to many marine creatures, but are themselves preyed upon. Planktonic shrimps, crabs and mussels feed on the mucus, while certain starfishes, urchins, crabs and fishes eat the coral tissue.

Predators such as Butterflyfish preying on the coral tissue will cause the other tentacles to retract, so they do not seriously damage any one colony before being forced onto another one. Some Triggerfish, however, eat both tissue and skeleton, but not in large quantities, so they don't represent a major threat. More of a problem are the Crown-of-thorns Starfish

(*Acanthaster planci*) and shoals of Bumphead Parrotfish (*Boltonopteri maricatum*).

Crown-of-thorns Starfish kill large areas of coral, often returning to the same specimen every night until the whole colony is a dead, white skeleton. They mainly prey on the fast-growing *Acropora* corals. Explosions of Crown-of-thorns Starfish populations occur in the Pacific, often wrecking reefs. Fortunately, they have not yet reached plague proportions in the Red Sea.

Bumphead Parrotfish occur in shoals of 20 or more and some individuals reach 120 centimetres (48in) in length. They charge into the coral, breaking it off with their forehead, eating both tissue and skeleton.

'SCIENTIFIC' DEFENCES

Soft corals do not generally rely on symbiosis with algae and do not have hard skeletons, but are rubbery. The colony is composed mainly of gelatinous material from within the polyp wall. Some species can spread over ten metres. They do have some calcium carbonate support, nevertheless, with tiny, elaborate, crystalline structures called sclerites in their tissues. These sclerites sometimes project outside the animal as sharp spines for defence.

Most soft corals are dull brown, green or off-white in colour, but the *Dendronephthya* species have strong colours. They do not have symbiotic algae but some have pink, orange or purple sclerites in their translucent colonies.

Fan and Whip Corals (Gorgonians), have sclerites plus a skeleton of proteins (gorgonin), similar to human hair, fingernails and rhino horn.

Soft corals and Gorgonian (horny) corals usually lose when in competition with reef-building corals in well lit water, except where their flexibility in the current makes them self-cleaning in areas of high sediment. They manage better in poorly lit locations, such as caves, overhangs, and deep water.

Gorgonians do well in stronger currents where their construction, with polyps so close as to be almost touching, slows down the current enough for their tentacles to trap prey. Sea fans in very strong currents can be two metres high and four metres (6.6-13ft) wide.

The precious Red Coral, *Corallium rubrum*, is a Gorgonian but its skeleton is mostly composed of calcareous material.

Black Corals are supported by a gorgonian-like protein but are otherwise more closely

related to stony corals with six simple tentacles on each polyp. Only the skeleton of Black Coral is black or dark brown; the flesh can be yellow, orange, brown or grey.

Bubble Corals are stony corals with bubbles of tissue covering the skeleton. Their tentacles project between the bubbles at night.

The polyps of the *Xenia* soft corals do not retract. Their tentacles continually open and close as if feeding, but they are thought to rely mainly on symbiotic algae for food. They often colonise dead stony corals.

Zoanthids are often mistaken for corals, but are anemone-like animals that form colonies with the individual polyps connected by creeping tubes.

Fire Corals are not true corals, but are more closely related to stinging jellyfish. Their polyps are not divided internally as with true corals. Individual polyps have specialised duties: feeding, defence, or reproduction. The sting comes from nematocysts, carried by hollow polyps with no mouth, arranged around a central polyp with a mouth.

THREATS TO REEFS

Man's exploding population and lack of environmental education, place coral reefs in jeopardy.

The blasting of harbour channels is necessary, of course, but the same cannot be said about quarrying for construction, nor collection for the tourist trade.

Destructive fishing methods, typified in the Philippines, is common to much of the southern Pacific. Packing potassium nitrate fertiliser into a bottle, adding a blasting cap and fuse, then throwing it into a shoal of fish, kills everything. Soon, the inshore reefs are destroyed and fishermen must go farther afield to feed their families.

Blast fishing also occurs in the Mediterranean, and immigrants have carried it from there to Australia and the USA, while soldiers have been known to have used hand grenades in the Red Sea.

Another form of destructive fishing is chamber net fishing which is particularly devastating in its consequences. It is a Japanese invention in which some 250 young boys crash stones and streamers (tied to lines), along a reef to drive fish into the net.

Drug fishing, by sodium cyanide, quinaldine sulphate, MS 222 or Derris root, either for food or aquariums, added to the use of

bleach or salt to flush out lobsters, also kills corals which, obviously, can't simply 'get out of the way'.

Deforestation works in a more indirect way. It causes topsoil to wash into rivers and out to sea where the siltation both stops sunlight getting through corals and physically smothers them. Siltation on a smaller scale also comes from harbour dredging and deep sea dredging for manganese nodules.

Another 'indirect method' of reef destruction arises out of the collecting of shells, sea snakes and Pufferfish. The removal of these predators upsets the ecosystem. Tritons and Pufferfish, for example, both prey upon Crown-of-thorns Starfish, one of the main natural threats to corals.

Pollution is, of course, a serious problem, and oil pollution from shipwrecks, bunkering at sea and spills from pipelines, tankers and rigs is increasing. Shipwrecks, for instance, leak oil for decades. Crude oil is often toxic and the heavier constituents eventually sink, smothering everything.

Human sewage adds to siltation and often spreads diseases; then industry discharges toxic chemicals, while fish farms release toxic chemicals and antibiotics. Phosphates from detergents, with phosphates and nitrates from agricultural fertilisers, contribute to algal blooms which then cut out sunlight and smother corals.

anchors dropped on reefs, and divers or swimmers touching coral, kill some of it. Fortunately, some marine parks supply fixed anchors and, in others, environmentally aware captains set up their own, often to have them stolen by local fishermen!

Despite the doom and gloom of some ill-informed 'Green' magazines, coral reefs are surviving; but we must stop destructive fishing and coral collecting, and control pollution.

We must also get things into perspective, though, since not every reef-destroying factor is human-generated.

In the northern Red Sea, apart from destruction on a few reefs at Hurghada and Ras Mohammad, the coral deterioration in the Gulf of Suez and the Straits of Tiran is due more to natural turbidity and sedimentation than to man.

WATCH OUT FOR OTHER
TOP MARINE FEATURES
IN NEXT MONTH'S ISSUE



COVER STORY — Jigsaw Trigger (*Pseudobalistes fuscus*)

Photograph: Max Gibbs, *The Goldfish Bowl*, Oxford

The Jigsaw Trigger, also known as the Blue-lined Trigger, can grow to around 8 inches (c.20cm) in the wild, but tends to remain smaller than this in all but the largest aquaria.

This is just as well because, in common with other Triggers, *P. fuscus* is territorial and will therefore not tolerate the presence of other Triggers, particularly if they belong to the same species. In fact, this intolerance may be also exhibited towards non-related fishes as well, though this is less predictable.

Small fish and most invertebrates will not last long in a 'Trigger' tank. This is not surprising, of course, bearing in mind the carnivorous dietary tendencies of these fish whose immensely powerful jaws and well-set-back eyes are perfectly adapted for crushing sea-urchins.

Yet, despite their several drawbacks, their character and 'tamability' make Triggers, including the Jigsaw, understandably very popular among marine aquarists who have large, fish-only set-ups.

What's your opinion?

Billy Whiteside,
BA, ACP

ALGAL REMEDIES CONTD.

Alan O'Brien's address is 86 Blumfield Crescent, Slough, Berks, and he writes: "... Your August column commented on your experiences with an algal remedy. My own experiences in using these chemical remedies is limited to my Koi pool, but are much the same as yours.

"Last year I used two separate products — not both at the same time, I might add. In each case, the results were the same — almost total destruction of all the pool plant life, including all my very expensive waterlilies. As you can imagine, I was not happy. What was worse, was the products claimed not to harm fish or plants. I know the dosage was correct as I filled my pond via a metering unit.

"What was even more frustrating was the off-hand way the manufacturers dealt with my questioning of their products. I'm sure that if such a thing happened as often in other hobbies, trading people would be on overtime!

"Perhaps as aquarists we are more reluctant to 'bite the hand that feeds us'. What I mean is, we need these companies to continue producing useful remedies, etc., even though we, or worse, the fish, may suffer when they make mistakes. Anyway, I decided in the end that a UV unit would be better and cheaper than having to replace waterlilies constantly; and this solved my problems."

Any firm that produces something that claims to be safe, and which when used as directed leads to the death of fishes or higher plants, deserves a reprimand. Perhaps we should feel it our duty to demand an explanation — and possibly some form of compensation.

Having published a disturbing selection of readers' letters over past months, I feel it only fair to provide a platform for a manufacturer. Dr Neville Carrington, a director of Interpet Ltd., Dorking, Surrey, writes: "... As far as I am aware the algicide you referred to was not one of ours." (Correct! B.W.) Neville continues: "We have been experimenting with algicides for many years and it

was only recently that we were successful.

"We have had two products on the market for some years with virtually no complaints of the type you mention: namely Green-Away for clearing green water in ponds, and Algaway which is for clearing green water in aquariums. Although the name of the aquarium product is slightly misleading, since we do not claim that it will attack algae, we have left it since we sell vast quantities in places like Hong Kong and they are used to the name.

"Green-Away and Algaway work by coagulating the free-swimming green organisms in the water and, incidentally, other suspended matter, so that it drops to the bottom. There is no chemical action on the algae or the plants involved, since the product works by changing the electrical charge on the floating particles which then sink to the bottom.

"Of course, the clumps of green particles will start to degrade when they have sunk to the bottom. This is not a problem in an aquarium or pond which is not over-crowded and which is well aerated; but in hot weather, in conditions without an adequate excess of oxygen, the oxygen used by the bacteria in breaking down the precipitated particles can have an effect on reducing the amount of oxygen available for the fish in the water. Therefore, we recommend that the sediment produced by this product is filtered out.

"We have a fairly similar product called Filter Aid of which you put a few drops into the filter and it clarifies the aquarium in the same way. None of those products is claimed to, or will, in fact, affect other algae.

"We have been experimenting for years to find a suitable product, but we have always hit the snag that when you add enough product to affect the algae, either on the sides of the pond or aquarium, or to affect the blanketweed, the dose is far too close to the dose which affects the higher plants. It was purely by chance that we observed when we were playing about with totally harmless chemicals that a certain combination would affect blanket-

weed. The mechanism appears to be that this makes the cell walls of the blanketweed brittle, so that it breaks off and disintegrates. This product is called Pond Balance and, while it affects blanketweed, it does not affect the algae on the side of the pond and therefore leaves sufficient material there on which the fish can browse ..."

MARSH MARIGOLDS

Dr Carrington ends: "By the way, you have probably had scores of environmentalists writing to you about taking Marsh Marigolds from the countryside. How much more relaxed things used to be!"

I'm pleased to tell Dr Carrington that he's the only person to have made direct mention of the item to me. One fax — which, by the way, was headed Interpet Ltd. — and one letter about the item, were addressed to our Editor. I responded to them in last month's edition.

I made mention of the fact that laws, geography, attitudes and meanings of words vary in certain cases in Northern Ireland from what is normal in England. Perhaps some things still are as they used to be in Northern Ireland! Farmers and landowners are still permitted to give away the odd wild plant — unless it's something rare. Dumping pollutants into rivers here is a concern of environmentalists at present; and some people have expressed concern about fish-farming in the sea just off the coast in certain areas of County Antrim.

DISTRESSED DAWN

Dawn Watkins resides at 44 The Lennards, South Cerney, Cirencester, Glos. and writes: "I have been a fishkeeper for approximately four years now and, in the past two years, I have managed to set up and run two tropical aquariums successfully. About six months ago I started to have A&P delivered to me and was very excited to find out that I would be on holiday near Perth during the Scottish Aquarist Show, which was being held in the Perth Town Hall.

"I did not know what to

expect at the show. I walked round the hall — and came out very distressed, like many of the fish on show that weekend! Do we feel as keen fishkeepers that after spending what could be years developing a fish specimen to a high standard we should then force it into a position which will encourage stress — and, in turn, maybe even White Spot, which we know through experience can result in death to the fish that we supposedly care about?"

"During my visit to Perth I noticed the presence of disease on fish that had been obviously healthy specimens at the beginning of the show. I ask you, A&P readers, to consider if, as responsible aquarists, we should be putting our cherished fish in this position. I, for one, question what the true intentions of these shows are!"

FUTURE TOPICS

My photograph shows a couple of Cardinal Tetras with a background of Java Moss, Java Fern and *Cryptocoryne nesliffii*. Drop me a line if you have successfully bred this species. I'd also like to have your opinions on: (a) culturing live foods for fishes; (b) air-operated filters; your favourite designs; (c) electronic aquarium heater/stats; (d) feeding marines; (e) pond care in winter; and (f) unusual livebearers.



A couple of my own Cardinals. Have you bred this species? If so, drop me a line.

I hope you have a happy and peaceful 1992 and that you resolve to drop me the occasional line c/o *Aquarist & Pondkeeper*, 9 Tufton Street, Ashford, Kent TN23 1QN.

Good-bye until next month.

Your questions answered

Having problems? Send your queries to our panel of experts who will be pleased to be of service. Each query receives a personal answer and, in addition, we will publish a selection of the most interesting questions and responses each month. *Please indicate clearly on the top left hand corner of your envelope the name of the experts to whom your query should be directed.*

All letters must be accompanied by an S.A.E. and addressed to:

Your Questions Answered, The Aquarist & Pondkeeper, 9 Tufton Street, Ashford, Kent TN23 1QN.

Herpetology, Julian Sims. Koi, John Cuvelier. Tropical, Dr. David Ford. Coldwater, Pauline Hodgkinson. Plants, Barry James. Discus, Eberhard Schulze. Marine, Graham Cox.

COLDWATER

'EASY' COLDWATER FISH?

I have been keeping tropical fish for about five years. Now I would like to try something a little easier and less expensive, but interesting all the same.

I have two 24 x 12 x 12in (60 x 30 x 30cm) aquaria. What advice would you give?

First, let us begin with facts. Keeping coldwater species of fish is not easier than keeping their tropical counterparts. In fact, in some respects, I believe them to be more difficult.

The mistaken idea which many people seem to have regarding the keeping and breeding of such species as the goldfish and its varieties, appears to be that one should begin the hobby of keeping fish by starting with these 'easy' types (goldfish) and later pro-



Many people labour under the misconception that coldwater fish are somehow 'easier' than tropicals.

gress into the more complex aspects of fishkeeping. In reality, the reverse is true, for many people who have had a great deal of success keeping

tropical species have failed miserably with attempts to keep and breed their temperate cousins.

Your tanks are, I believe,

about the smallest limited size anyone should choose to house species of the carp family, though other, smaller types of native coldwater fish can be kept in smaller quarters.

There is a rule that the limit for keeping goldfish in aquaria is to allow 1 inch of fish to 24 square inches of surface area (2.5cm per 155 sq cm). However, I believe that at least 30 inches (c 195 sq cm) is probably safer, as fish that are kept under crowded conditions, just like humans, suffer stress. Stress causes problems in many ways, because health suffers and outbreaks of disease become common.

Choose small fish and, by giving them plenty of room to live their lives, they will grow and you will have the pleasure of watching your pets blossom into adults.

TROPICAL

SHARK TANK 'COMMUNITY'

I own a 30 x 12 x 15in (75 x 30 x 38cm) tank in which I would like to keep 'sharks'. Would it be OK to keep Silver Sharks, Black Sharks and Red-tailed Black Sharks? I'd also like to introduce some large Angels and am very fond of eels. Are there any species of the latter available which are compatible with sharks?

You could house all the varieties of sharks listed, providing you give them their own territory (plant pot, etc). Without somewhere to call 'home', each tries to carve out a piece of the tank and fighting occurs where

territories overlap. They will not grow over-large in a 30in tank; the small volume of water reduces the growth rate.



Silver Shark (*Balantiocheilus melanopterus*). Its growth will be restricted in a small tank.

I do not think small sharks hidden in pots constitutes a very interesting tank. Why not choose other big fish: Discus, Angels, Silver Dollars, Tilapia? Visit the local shop to see what's available. Again, growth will be restricted, so you will need to buy fish already adult and of a suitable size for you. To prevent water quality problems, you will need good filtration, and only stock two or three fish.

Really, a small tank should be used for small fish, so eels (if you are talking about *Anguilla*) should not be kept in a tank as small as yours. It's far too small for them to stretch out and swim.

HERPETOLOGY

PENINSULA NEWTS

Can you identify my newts?
Total length: about 5in (c 12.5cm)
— body and tail equal; very smooth
shiny skin. Colour: above — brown
(the female is uniform, but the male
has a line of broken orange
'flecking' along the side and onto
the tail); the ventral side is red/
orange and black mottling; the
throat is tinged in orange but has no
markings.

Both animals have rather short
blunt fingers (4) and toes (5); their
heads have prominent eyes and
nostrils on the tip of the snout; they
also possess a gular fold.

The tail is very interesting: it is
thicker at the base and very round,
becoming laterally compressed and
conspicuously deeper and paddle-
like posteriorly; the tip is rounded
and there is an orange-tinged ridge
from about a third down the tail in
both sexes, but fainter in the female.
The ridge does not extend onto the
body and the cloacal region is
inconspicuous and not swollen in
either animal.

They are in water at the moment
and show no desire to leave it so far.

From the coloration and size
of the newts that you own,
together with their preference
for remaining in water, I think
that they are Peninsula Newts
(*Notophthalmus viridescens pis-
cariopola*) from the south-eastern
United States of America.

The common name, Penin-
sula Newt, refers to the distri-
bution of this sub-species of
Notophthalmus throughout the
Florida peninsula. It inhabits



The Peninsula Newt (*Notophthalmus viridescens piscariopola*) —
photographed (most unusually) on land, is variable in colour.



The very closely related Red-spotted Newt (*N. v. viridescens*)
photographed from above on a bed of moss.

ponds, ditches, swamps and vir-
tually any other body of water.
It is also abundant in canals that

are choked with Water Hyacinths.

This species of newt is dark

olive, dark brown or almost
black on the dorsal surface. The
flanks and ventral surface have
a ground colour of yellow or
orange, finely peppered with
black specks.

Unlike the Red-spotted Newt
(*N. v. viridescens*), probably the
most commonly kept sub-
species of this genus, the Penin-
sula Newt lacks red spots.

However, like other mem-
bers of the genus *Notophthal-
mus*, the Peninsula Newt does
have a terrestrial larval stage
called an *eft*. These land-loving
larvae hide under logs and other
debris on the banks of ponds
and canals. After metamor-
phosis, it is quite unusual for
the adult newts to live on land.

Further details about North
American newts and sala-
manders, including members of
the genus *Notophthalmus*, can
be obtained from the book:

*A Field Guide to Reptiles and
Amphibians of Eastern and Cen-
tral North America*, by Roger
Conant and illustrated by
Isabelle Hunt Conant.

Published by: Houghton Mif-
flin Company.

ISBN 0-395-19977-8 (paper-
back)

0-395-19979-4 (hard-
back)

This book, and many others
dealing with all aspects of her-
petology, can be obtained from:
Natural History Book Service,
2 Wills Road, Totnes, Devon
TQ9 5XN.

Write for a free copy of their
comprehensive catalogue.

PLANTS

ROTTING LEAVES IN WINTER

I wasn't able to cut back my
oxygenating pond plants and water
lilies in the autumn. How can I
tackle the problem of rotting leaves
at this time of year?

It rather depends on the size of
the pond and the quantity of
decaying vegetation which has
accumulated.

In general, the normal die-
back of aquatic vegetation
should cause no problem. After
all, nobody carries out this task
in nature and the fish still sur-
vive!

However, if the pond acts as a
trap for wind-blown leaves from
surrounding trees, this can
cause a problem. If you failed to
net the pond against this even-
tuality, you are left with the
problem of dragging them out
with a net now — and before the
spring.

WATER LETTUCE CULTIVATION

I would like to grow some of the
more unusual floating plants like
Water Lettuce (*Pistia stratiotes*).
What conditions do they require in
terms of light and water quality? Is
it possible to get these plants to

flower in aquaria?

Water Lettuce (*Pistia strati-
otes*) is a large plant which can
reach the size of a dinner plate.
Indeed, grown in a heated
greenhouse with high humid-
ity, specimens will reach this



A beautiful 'patch' of Water Let-
tuce photographed in the wild in
Florida.

size in cultivation.

In aquaria, cover glasses will
ensure that the humidity is
high and will stop the plants
burning up under the lamps.
However, although these plants
grow profusely, they assume a
miniature form which can
quickly smother the surface in
tiny rosettes, each of which is
only a couple of inches in dia-
meter. Flowering is not known
in aquaria.

Other floating plants such as
Salvinia and *Limnobium* are
treated in exactly the same way.
Floating plants consume nutri-
ents in vast quantities and so act
as vegetable filters.

MARINE

STOCK ADVICE

I recently purchased a new tank and equipment and would welcome your advice on the stock I wish to keep.

My equipment is as follows: a 6 feet x 18 inches x 24 inches deep (180 x 45 x 60cm) all-glass tank with cover glasses; two 200 watt combined heater-thermostats and one heater with a separate thermostat; two Fluval 303 external filters, one containing activated charcoal and filter sponge, the other containing ceramic pipes, pot scourers and filter sponge; four 201 power-heads operating undergravel filter-plates which are covered with 2in (5cm) of crushed seashells and 2in (5cm) of coral sand; two 5ft (150cm) Trison tubes, one 4ft (120cm) Triton, one 4ft (120cm) Sunglow and one 2ft (60cm) Actinic tube.

I also have a pretty basic protein skimmer which I'm not awfully sure how to work. Decor is mainly tufa rock and living rock with small pieces of dead coral and shells lying about.

I would like to keep a coral community of mixed invertebrates and fishes consisting of the following:

FISHES	No
Common Clownfishes	4
Green Chromis Damselfish	4
Electric Blue Damselfish	4
Powder-blue Surgeonfish	1
Regal Tang	1
Yellow-headed Jawfish	1
Mandarin Dragonet	1
Bicolor Blenny	1
Firefish Goby	4
Neon Goby	1
INVERTEBRATES	No
Orange Cup Sponge	1 or 2
Leather Coral	several clumps
Sea Whip	1 or 2
Caribbean Anemone	1
Sand Anemone	1
Malta Anemone	1
Pink Malta Anemone	1
Mushroom Polyps	several colonies
Feather Duster Worms	several
Serpulid Colonies	several
Cleaner Shrimps	2
Blood Shrimp	1
Dancing Shrimp	2-3
Dwarf Hermit Crabs	3-4
Flame Scallops	3-4
Long-spined Sea Urchin	1

Your aquarium will have a net capacity of the order of 100 Imperial gallons (approx 450 litres) which is a wonderful size

in which to create a home coral reef.

The equipment inventory looks most comprehensive and I am particularly pleased to see the multiplicity of heaters and thermostats which you have installed. This provides a great 'great insurance policy' against heater failure and is worth every penny for peace of mind value.

Your filtration system is also especially comprehensive and, once fully bacterially-matured with an agent such as Seamat, will be capable of being stocked to a maximum of one inch of fish to each 3 gallons (2.5cm per 13.6 litres) of seawater after about 12 months of operation. However, initially for that first 12 months, I would advise you not to exceed a stocking ratio of 1 inch of fish to each 4 gallons (2.5cm per 18 litres) of seawater or, in other words, a maximum of 25 inches (63.5cm) of fish in total.

I would make only two comments about your choice of fishes and those are:

- (i) Electric-blue Damselfish tend to be extremely quarrelsome with their

own species so, unless you can find a mated pair, I would restrict it to only one of these damselfish

fish and increase the number of Green Chromis.

- (ii) I wouldn't buy the Regal Tang and the Powder-blue Surgeonfish until the filtration system has been fully matured for at least six months.

With regard to the invertebrates list, I would make the following observations:

- (a) Buy the anemones first and let them settle down in their preferred positions in the tank for a full week before purchasing any further invertebrates. Try to keep the Caribbean Anemone (I think you mean the *Condylactis* anemone) well away from the other anemones in order to prevent inter-species stinging.
- (b) Place the Mushroom Colonies as near the lights as possible, but well away from the nearest anemone.
- (c) Orange Cup Sponges, even when placed in a shaded position, rarely survive under home aquarium conditions for much longer than 8-9 months. The same comments apply to Sea Whips.
- (d) Make certain that you are buying Dwarf Hermit Crabs as otherwise these powerful brutes grow like wildfire and are superb demolition experts; ie, as they clamber around (and through) your carefully positioned rock-work, they'll knock it all over the tank.



Regal Tangs (*Paracanthurus hepatus*) should not be introduced into an aquarium until the filterbed is fully mature.

KOI

BLACK ON GOLD

Two of my Koi have developed a black spot the size of a match head. Some of my goldfish have developed similar spots.

I have treated the pond with a parasite cure but it's had no effect. The fish seem to be perfectly OK, though. Both the Koi are golden yellow and the goldfish are the usual golden/orange. Is there any significance in this?

The problem of black spots appearing at random on the bodies of fish is one which seems to be increasing throughout the country. Several half-hearted explanations as to the cause have been put forward, but none really stand up to scrutiny.



Single-coloured fish appear to be more prone to the development of random black spots.

What is generally accepted is that the spots are caused by some peculiarity of pigmentation changes within fish and, as such, nothing can be done in the way of treatment.

What is peculiar is the fact that it is mostly single-colour fish which are affected, such as Ogons and goldfish.

My own opinion is that these oddities are the result of decades of inbreeding of the various varieties and is something which we will simply have to live with.

I, too, have a couple of nice Ogons which are similarly affected, but as I'm not in the business of showing and exhibiting, I simply ignore them, although I did hear about one callous individual who actually removed an offending scale, only to see its replacement grow back with the same black spot!

I'm sorry I cannot be more constructive but, at least, this problem does not prevent you enjoying your Koi.

Herpetology matters

By Julian Sims



CAPTIVE BREEDING

A fundamental difference of opinion is frequently expressed among the reptile and amphibian fraternity. Some

herpetologists — the conservationists — seek to save animals in their natural habitat, whereas other enthusiasts are particularly interested in keeping reptiles and amphibians.

Inevitably, arguments arise because 'the conservationists' believe that the removal of animals from the wild is a major factor in the depletion of animal populations. In extreme cases, this can even threaten a species with extinction. The 'keepers' are sure that if animals are not maintained in captivity, then interest in herpetology would be reduced in the long term.

I believe that this difference is resolved by captive breeding. Captive bred animals not only provide herpetologists with species which thrive in maintained conditions, but they can also ensure the survival of some species threatened in the wild by the destruction of habitat.

Captive breeding is pro-

moted by most herpetological societies. For example, the British Herpetological Society (BHS) held a captive breeding open day at Birkbeck College, University of London at the end of August. The aim of this informal event was to provide the opportunity for discussion, together with the sale and exchange of captive bred stock. There were also commercial displays of books and vivarium equipment.

At its September meeting, the Association for the Study of Reptilia and Amphibia (ASRA) held a captive breeding workshop at the Cotswold Wildlife Park. The workshop was divided into four groups (lizards, snakes, chelonia and amphibians) catering for the varied interests of those herpetologists who attended. Useful information and experiences were exchanged. Emphasis was placed on the diet and captive conditions required to bring adult animals into breeding condition. The care and rearing of captive bred juvenile animals was also discussed.

Further details about the work of the captive breeding committees of these two organisations can be obtained by writing to:

ASRA, c/o Cotswold Wildlife Park, Barford, Oxon OX8 4JW.
BHS, c/o Zoological Society of London, Regent's Park, London NW1 4RY.

WHAT IS A WORM LIZARD?

Although rather misleading, 'Worm Lizard' is the accepted common name for members of the reptilian sub-order, the Amphisbaenia. But these reptiles, at first glance, might be described as 'snakelike'.

This is because all but three members of this strange group are without visible limbs and none have external ear openings, another feature which they have in common with the 'true snakes'.

Perhaps the 'worm' part of the common name is more acceptable because Worm Lizards are almost completely subterranean. They live in tunnels which they excavate themselves with the aid of their specialised

head. Worm Lizards also have bands encircling their body and tail, similar to the true earthworms. However, there the similarity ends because these rings are very reptilian, being composed of scales.

Worm Lizards are found in Africa and the neighbouring parts of southern Europe, western Asia and on the island of Socotra in the Arabian Sea. These unusual reptiles are also found in South and Central America, the West Indies and Florida.

To date, approximately 130 species have been discovered and these belong to four families. The largest family, the Amphisbaenidae, has representatives throughout most of the geographical range including South America, Africa and southern Europe. Probably the longest member of this family is found in the tropical rain forests of South America. *Amphisbaena alba* grows to about 75 cm (30 inches) in length and, as its specific name indicates, has a plain white body.

This family also contains the only species of Worm Lizard to be found in Europe, *Blanus cinereus*. *Blanus* is found in Spain and Portugal as well as in North Africa. This species is much smaller than those found in the tropics, growing to a maximum length of 30 cm (12 inches) although usually smaller.

The Florida Worm Lizard, *Rhineura floridana*, is the only member of the family Rhineuridae. This species is very restricted in distribution, only being found in central and northern parts of the Florida peninsula. It is the only type of Worm Lizard to have been discovered in North America. Adult Florida Worm Lizards normally grow to a length of between 18 and 28 cm (7 to 11 inches), although the record is an impressive 40.6 cm (16 inches).

Members of the family Trogonophidae are found in north-west Africa and the Arabian peninsula. Not surprisingly, members of this family specialise in burrowing in sandy soil.

The Bipedidae is unlike the other three families of Worm Lizard because members have a pair of limbs at the front of their body. The single genus, *Bipes*,



Enthusiasts examining some captive bred juvenile Hermann's Tortoises at the ASRA workshop.

Naturalist's notebook

By Eric Hardy



DANGEROUS DISCOVERIES

Crocodiles, more than alligators, have a reputation of danger to man, but for apparently the first time on record, a Black Caiman recently attacked a man in Guyana.

And on the subject of danger, a new species of poison-dart frog, *Dendrobates auratus*, has been found in the Serrania De Sira in Peru, by a Vienna University expedition. Nearly 20 others already known mostly lay eggs on leaves on the ground, and on hatching, the tadpoles wriggle onto the parent's sticky mucus back until it reaches water.

IDENTITY MARKS

For many years naturalists have learned to distinguish wild Bewick Swans by the individual colour patterns of their yellow-marked beaks, and individuals of other animals by their distinctive patterns. Zoologists at Leicester University received a grant for research into similar individual recognition of Great Crested Newts, by reading distinctive patterns or blotches on their bellies.

Individual patterning can also become distinctive on certain terrapins, tortoises, etc, and once learned and listed, used to identify individuals where other forms of marking like heavy radio-tags used on toads or colour dyes, are difficult to employ.

POND-DIP FINDS

Only a few comprehensive works like Norman Joy's *British Beetles* cover all the numerous species one may stumble upon when pond-dipping. For

example, there are two interesting semi-aquatic weevils which Tom Eccles, a distinguished Liverpool coleopterist, drew my attention to when he recently found them while "sweeping" across the water in the semi-aquatic plants in the ditches in the giant Shell Oil Complex at Stanlow, in Cheshire. They were *Hydromus alimatus*, a parasite of floating Water Plantain, and *Thyrogaster festucae*; apparently this is a first county record.

The ditches there were thick with Water Violet, *Hottonia*, now a rather uncommon plant, as it is sometimes collected for garden ponds, illegally.

Aquatic fungi aren't all just unexciting water-moulds. Wading in the stream below Northop Mill in North Wales, I frequently came upon Eyelash Fungus growing on damp, dead branches, for it likes wet places with very rotten wood. It is named from the dense, dark hairs which cover its tiny orange discs that cluster on the rotten twigs. In winter I usually find tiny Scarlet Elf-cups in similar streamside haunts, like the Clwydog's gorge at Bontuchell, and the Alun at Loggerheads. Little brown *Galerina* toadstools often grow in sodden Sphagnum Moss around boggy pools, but none of the big mushrooms grows under water, because of the difficulty of spore production.

CENSUS RESULTS

A national census of dog whelks found none in the polluted Mersey, though Roach, Bream and Gudgeon as well as estuarine Flounders, have recently been netted from formerly polluted waters of the upper estuary at Warrington Kingsway bridge.

Water changes to marine life in the Kattegat, between Denmark and Sweden, may also have occurred in Cardigan Bay where northern boreal waters of the Irish Sea meet southern Lusitanian waters off St David's. Bristleworms and shellfish, some new to science, dredged last summer by Menai Marine Lab's research vessel, Prince Madog, in The Gutter, south of Aberystwyth, indicate this.

The bristleworm *Orbinia armandi*, previously found no nearer than Shetland, may have reached its southernmost haunts there, and the rare Mediterranean sea-smail *Galathea rugosa*, and the bivalve *Lauria magna*, their northernmost. Lepton shells often evolved a partnership with crabs, and a rare species here, *Lepton squamatum*, is a commensal on the burrowing crab *Upogebia*. They also found a rare British polychaete or bristleworm, *Athorospia disticha*, not previously known in the Irish Sea.

MIXED BAG

Several so-called 'scientific' investigations into Loch Ness's phoney monster, mostly publicity stunts like Peter Scott's giving it a Latin name strongly condemned in *Nature* by the British Museum's chief zoologist for lack of evidence, certainly had no proof that the numerous claims from untrained public visitors were even reporting the same thing, or had sufficient experience to identify what they were reporting.

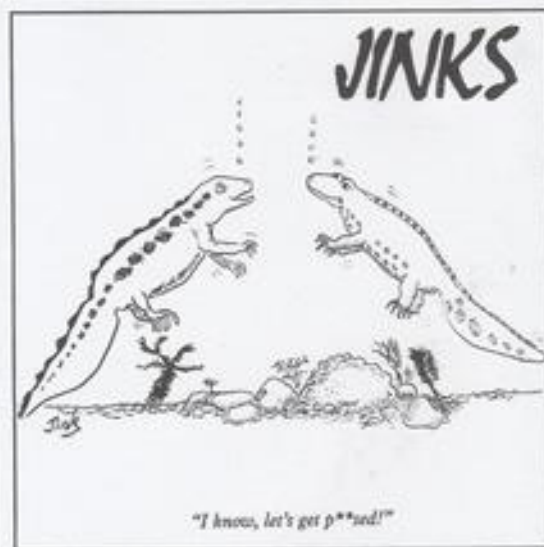
A serious scientific investigation of Loch Ness has been ignored by the press. This is a grant of £108,000 for Dr R. I. Jones of Lancaster University to investigate the microscopic plankton communities of the

Loch Ness oligotrophic or algal waters.

An historic haunt of the Burbot, a freshwater cod now believed extinct in Britain, has been revealed to have occurred late last century and, perhaps to 1922 in the River Hull, possibly in the tidal sections of the brackish Humber estuary. Burbot formerly inhabited the Yorkshire Derwent, the New Idle Drain at Doncaster, the Trent, Skerne (Darlington), Weaver (Cheshire) and the Severn estuary.

It's more important to find how fish live than to catch specimens so big that you don't have to lie about them in competitive weights. In the first issue of a new journal, *Fish Biology and Fisheries*, Kurt Kotrschal of the University of Vienna details the important discovery that the so-called 'taste-buds' scattered over the body of the common estuarine Bearded Rockling do not help it find food, as traditionally assumed.

Millions of these chemically-sensitive cells, packed 100,000 to the mm, make its first dorsal fin into a special organ reacting to body slime, or mucus, on approaching predators like Anglerfish. This warning advice probably applies also to other fish like Lampreys and Gurnard, even freshwater Roach.





Focus on: Herpetology

HORNED FROGS

Marc Staniszewski profiles this dramatic-looking, aggressive, but colourful and fascinating, group of large frogs.

Photographs by the author

times further from the lower jaw than for other anurans. This feature allows them to use their preying technique of burying deep into loose soil or leaves with just the eyes showing to keep on the look-out for food or their few enemies.

A dense bony shield also covers the lower

Main photograph: Newly metamorphosed *Ceratophrys cornuta*.

Belonging to the diverse and predominantly South American anuran family Leptodactylidae, the eight or so species of Horned Frog (*Ceratophrys* and *Proceratophrys*) originate from the grasslands or leafy rain forest floors of Colombia in the north, to Argentina in the south.

Here, they spend much of their time partially buried in leaf litter, where they lie in ambush, ready to leap out on an unsuspecting mouse, snake or even small bird. Using their powerful jaws lined with sharp teeth, they clamp onto their victim before stuffing it into their wide mouth using strong front limbs — a very effective eating machine indeed.

Yet, it doesn't end there! Their own pugnacious disposition and strength means that they fear and have few enemies in their natural habitat, so after heavy rainfalls they are known to congregate in hordes where they will begin to prey upon and devour each other. This cannibalistic tendency is often the only way that they can control their own population and is a phenomenon present in few animals (the unrelated, but similar, African Bullfrog being a notable exception).

MAIN CHARACTERISTICS

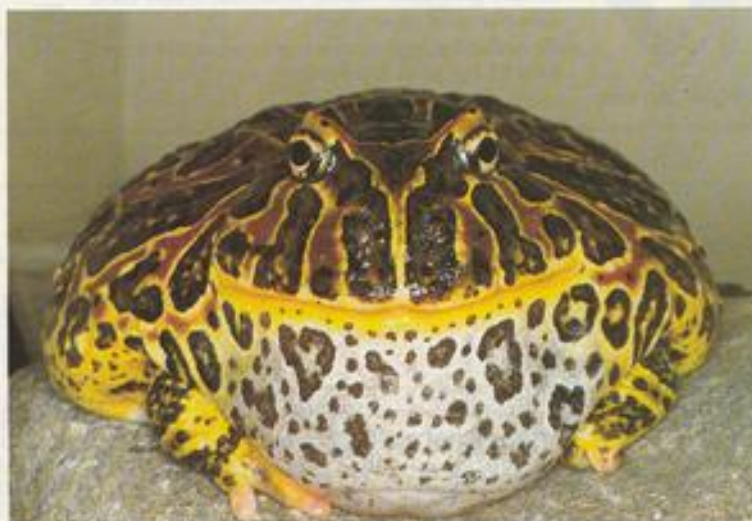
Horned Frogs vary in size, from a rare species hailing from N-W Peru called *Ceratophrys stelmansi* which is a little larger than a foil milk cap, to the impressive *Ceratophrys aurita* from northern and central Brazil which can attain 10in (25cm).

Nearly all species are bizarre in appearance and garishly adorned in bright and bold colours, varying from a grass green, grey or orange background, with blotches of brown, red, black or yellow. In the main, the skin is very warty, which gives the impression that they are toads. They are therefore sometimes mistakenly called Horned Toads (which is, in fact, the correct name for their south-east Asian counterparts, *Megophrys*).

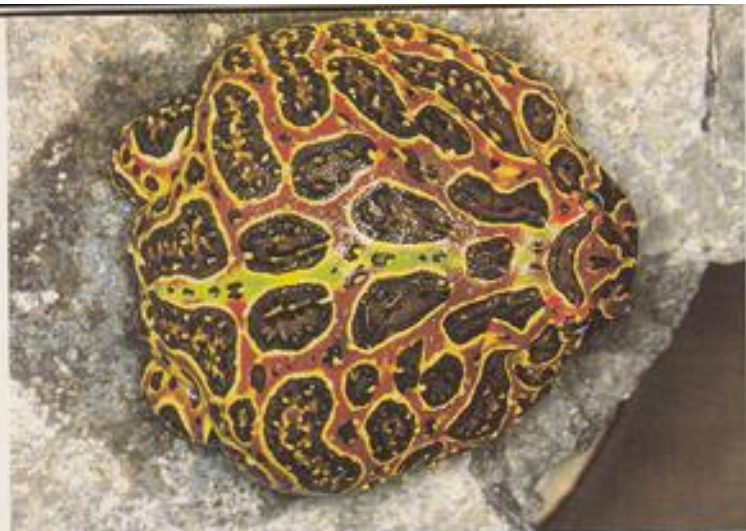
Also unique to these frogs is the skeletal structure. The head is disproportionately large and, unlike other anurans where the skull is dorso-ventrally compressed, it arches high, with the eyes being two or three



Adult Amazonian Horned Frog (*C. cornuta*).



This is a huge male Argentine Horned Frog (*C. ornata*).



This top view of an Argentine Horned Frog beautifully demonstrates the remarkable colours and patterns of this attractive species.

skull and upper back, providing added protection. The jaws themselves are extremely wide and very flexible, allowing the frog to devour creatures seemingly too large even to contemplate attacking.

Ceratophrys get their common English name from the soft and flexible extensions to the upper eyelids which have formed horns. In some species and newly-metamorphosed froglets, the horns may be reduced or completely absent, but in most species, particularly *Ceratophrys calcarata* and *cornuta*, they are very evident.

It is not known precisely what the function of such horns is. Suggestions include crypsis (a technique of disrupting their outline for camouflage reasons), or they may protect the eye from damaging sun's rays, or they may be a courtship adornment. Most likely, they add to the foreboding appearance of the frog. Whatever their function, they serve to increase the uniquely grotesque, yet charming, appearance of these frogs that are, fortunately, a delight to keep in captivity.

SOURCES OF HORNED FROGS

During the last decade one species, the Argentine Horned Frog (*Ceratophrys ornata*), has flooded the chain of specialist reptile suppliers as one-inch (2.5cm) newly-metamorphosed froglets. Most of these have originated from breeders in the USA and can certainly be recommended as fairly priced, healthy amphibians with voracious appetites from the outset.

Occasionally, other species may become available, either from sporadic imports of wild-caught specimens, or the occasional breeding success of an overseas breeder or zoo.

Herpetological clubs are also good sources of those rarer species.

CAPTIVE CARE

Warning

Before attempting to maintain adult *Ceratophrys*, you must be made aware that they are one of the few amphibians which can inflict a

nasty bite. With their many sharp teeth embedded in your skin, they hang on like bulldogs!

To avoid such problems, it is recommendable to handle them only when necessary and, even then, with soft-gloved hands (or more safely scooped up into a plastic container). The famous naturalist Gerald Durrell had the misfortune of discovering just how painful the bite of these frogs are, as described in his book *The Drunken Forest*.

As already established, most species of Horned Frogs whether captive-bred or wild-caught, flourish in captivity, where they will achieve maturity very quickly.

Initial housing

If newly-metamorphosed froglets are obtained, they should be housed for the first few months in margarine containers with adequate ventilation holes in the lids. Here, they can be given individual attention.

The furnishing need only consist of kitchen towel paper that is immersed in 0.75-1.5cm (0.3-0.6in) of water. The froglets will bury themselves into the paper as though it were mud, displaying the characteristic 'hide and ambush' technique.

Both paper and water must be changed every day because these frogs secrete large

amounts of ammonia in their waste which could eventually rise to toxic levels. The containers should be situated in a warm vivarium or room and kept at a temperature of 78-82°F (25.5-28°C) during the day and no lower than 68°F (20°C) at night.

Aquaria & Vivaria

The frogs should be moved to progressively larger quarters as they grow. Once full grown, although glass-fronted wooden vivaria should be preferred to all-glass aquaria, this is not a prerequisite to successful care, as these frogs are virtually fearless. More important is that you should keep your small frogs separate **AT ALL TIMES** as, inevitably, one will grasp the limb of another (resulting in a digested leg stump), or simply attempt to swallow the whole frog!

Size of the vivarium depends on frog size, but as *Ceratophrys* prefer to squat endlessly in the same position, an eighteen by fifteen inch (45 x 38cm) vivarium is adequate for even the largest *Ceratophrys aurita*.

Decoration

Decoration depends upon the natural environment, with those species from neotropical forest preferring moist Sphagnum Moss or leaf litter, while those from drier regions are more at home in a damp, friable sandy soil for their burrowing activities. Where Sphagnum Moss is the substrate, then this must be sprayed with boiled rainwater to keep it alive; tapwater will kill and rot it. In both set-ups, a large shallow water bowl must be made available and the decor finished off with a decorative log or rock.

The disadvantages with the above set-ups are that *Ceratophrys* needs cleaning regularly. Therefore, I recommend a hygienic system such as foam or sponge base, with large shallow water bowl, with the water content of the sponge depending on the frog's natural preference. Foam and sponge are easy to handle and wash.

Heating, Lighting & Climate

Maximum daytime temperatures for adults should be not more than 82°F (28°C). At night, it can be allowed to fall to around



An obese and pugnacious female Argentine Horned Frog.

68°F (20°C), with 62°F (16.6°C) the absolute minimum.

Lighting should be subdued to imitate natural conditions, with a 15 or 25W bulb being adequate. No special lighting arrangements are necessary.

Climatic conditions are only important where breeding is concerned (see **CAPTIVE BREEDING**), although regular daily mistings with a hand sprayer are beneficial.

Hygiene

Water needs to be changed daily owing to high excreted ammonia content, and for a terrestrial vivarium the moss should be replaced with fresh moss weekly or fortnightly. Leaf litter can either be discarded or steam treated to kill potentially dangerous microorganisms. Where foam or sponge is used, this can simply be washed every three or four days.

The whole vivarium needs a weak (1% strength) disinfection with Dettol or Savlon every fortnight. If a strict routine is followed, virtually no ailments will affect Horned Frogs.

Feeding

These greedy frogs will take almost anything that moves, often leaping wildly at the keeper thinking him/her as just another food morsel! Small frogs grow quickly on a diet of insects, worms, strips of fish, such as whitebait, and chopped raw meat.

Adults prefer large earthworms, raw meat, fish and small rodents and chicks, the last two being preferably frozen (then defrosted!) and available from specialist reptile and snake food suppliers.

Temperature must be sufficiently high to aid digestion, and care must be taken not to over-feed these frogs, as obesity will lead to death.

BREEDING

During the last ten years, several species of *Ceratophrys* have been made available by the breeding of huge numbers in the USA. This involves a technique of injecting a pituitary stimulating hormone to both sexes to induce amplexus (mating clasp) and spawning.



C. ornata on the attack.



The Chacoan or Cranwell's Horned Frog (*C. cranwelli*) - a recently described species.

Although this has obviously been a godsend in coping with the high demand, a more acceptable method with a much lower mortality rate (in both eggs, tadpoles and adults) is to breed Horned Frogs naturally.

Access to a small greenhouse during the summer will greatly increase the chances of success. First of all, you will need to sex your frogs: males tend to be smaller and have a darker throat. A large shallow pool no more than 4 inches (10cm) deep, with plenty of water plants, should be provided, and the greenhouse must be shaded and well ventilated during hot weather. The rest of the furnishing depends upon the frogs' natural habitat (see previous section).

Initially, both sexes are well fed and then introduced, but at no point is the greenhouse watered, although the pond must not dry up. After a few weeks, the greenhouse is thoroughly sprayed using warm water at regular intervals (up to four times a day) to increase humidity, which should induce the male to come into breeding condition and begin calling.

Eggs will begin to develop inside the female's body and courtship should commence after a week or so of spraying, with the male grasping the female in the typical axillary amplexus, after which spawning will commence.

Between 100 and 1,000 eggs are laid in large clumps and these are transferred to aquaria with twelve inches (30cm) of water (neutral reactivity), heated to not less than 74°F (c.23°C) and supplied with good filtration/aeration.

Upon hatching, tadpoles are immediately carnivorous and are best split into groups of fifty. Expect a mortality rate of up to 80%; metamorphosis commences 3-6 weeks later, depending on species.

SPECIES SELECTION

Below is a list of those species which are available in captivity:

Argentine Horned Frog (*Ceratophrys ornata*)

Also called Escuerzo or Bell's Horned Frog, this is a commonly available and beautiful species attaining 4-5.5 inches (10-

14cm), with males being smaller. It originates from the somewhat dry Argentine pampas grasslands.

Colombian Horned Frog (*C. calcarata*)

This is a smaller green and mottled brown species attaining 2-3 inches (5-7.5cm) that has a massive bony head and well-formed horns. This species is occasionally bred in captivity and is not as hardy as *C. ornata*.

Brazilian Horned Frog (*C. aurita*)

An aggressive species that is a lurid orange colour with green, brown or black blotches. It reaches 10 inches (25cm) in length, but is only occasionally seen in reptile shops.

Chacoan or Cranwell's Horned Frog (*C. cranwelli*)

A recently described attractive species from Northern Argentina, Paraguay and Bolivia, this frog looks similar to *C. ornata* but is smaller (females: 4.5ins-11.4cm, males: 4ins-10cm). It is quite agile and sometimes hybridises with *C. ornata* and *C. cornuta*.

Amazonian Horned Frog (*C. cornuta*)

This is the gem of the genus, with its orange or lime green coloration and amazingly exaggerated horns. Grows to 5 inches (12.7cm) and is a difficult species recommended only for the more experienced hobbyist. The 0.5inch (1.3cm) newly-metamorphosed froglets are best raised at a constant 80°F (26.6°C) in containers with a dampened Hortag base as they can drown easily in little water. The preferred diet is caterpillars, fish and tadpoles.

Other species

Other species (rarely) available include Guenther's Horned Frog (*C. appendicula*), the two-inch (5cm) Bolivian Escuerzo Horned Frog (*C. stolzmanni*) and the recently discovered grey *Proceratophrys boiei*.

All are recommended, as are the Southeast Asian Horned Toads (*Megophrys*) from the family Pelobatidae which imitate leaves of a forest floor.

Books

Classic Natural History Prints — Fish

By: S P Dance and G N Swinney
Published by: Collins and Brown
ISBN: 1-85585-070-2
Price £19.95

If you enjoy finely illustrated and well produced books on fishes, like I do, you will enjoy browsing through this new book which contains 53 full-page and 14 half-page colour illustrations carefully selected from nearly every notable fish book published between 1719 and 1910 that contained colour plates. Opening flat for ease of use, this large volume (14½ x 10½in) traces the history of fish illustration from the earliest works and offers a tantalising glimpse of some of the rarest and most sought after ichthyological books.

Each plate is accompanied by a brief text naming, in English and Latin, the species illustrated, the artist whose work we are enjoying, the source and date of publication of the original work, and its original size. Additionally, interesting natural history notes on each species illustrated and a short biographical note on each author are included.

The plates themselves are faithfully reproduced, right down to the odd flaw in the original paper. In some cases, the reproductions are slightly reduced in size from the originals, but this in no way compromises their quality and, indeed, others are enlarged to good effect. For example, there is a beautiful lithograph of the Brindled Grouper (*Epinephelus lanceolatus*) taken from Francis Day's *The Fishes of Malabar*, measuring 9½ x 8½in in the original, but here reproduced on a full page.

The selection of illustrations encompasses a wide range of marine and freshwater, temperate and tropical species. Enthusiasts of our native fishes are well catered for as well, with eleven reproductions from the works of Couch, Houghton and Jardine.

However, with comparatively inexpensive facsimiles of Houghton and Jardine presently readily available, and bearing in mind the large number of copies of Couch's *A History of the Fishes of the British Islands* which were originally published, my own feeling is that the space could perhaps have been put to better use by offering a further glimpse of the superlative and rare works of, for example, Seba, whose well known, yet seldom seen, *Thunnus*, occurs in only a scarce few dozen coloured copies, and Bleeker, whose monumental atlas of the exotic fishes of the Indonesian Archipelago is becoming difficult to obtain, even in the recent full sized facsimile edition.

This notwithstanding, here we have a valuable source of reference for the ichthy-

ologist and collector. While we are still waiting for a book that gives a biographical history and pays fitting tribute to the artists themselves (see Humphry Greenwood's article in *Ichthos*, December 1990), this book deserves a place in the library of anyone with even a passing interest in ichthyology, its history, illustrators and illustration.

Steven Simpson

T.F.H.'s Latest Three (. . . or Four) Herpetology Books

1. Keeping and Breeding Geckos

By: Herman Seuffer
ISBN: 0 86622 218 9
Price: £22.95

2. The Atlas of Snakes of the World

By: John Coborn
ISBN: 0 86622 749 0
Price: £89.95

3. Reptile Care (Volumes 1 and 2) (An Atlas of Diseases and Treatments)

By: Fredric L. Frye
ISBN: 0 86622 214 6
Price: £125.00

There's something almost surreal about geckos. At least, that's what I've always felt. In fact, it is this 'surreal' quality that I have found so inexplicably fascinating ever since my childhood days. Those were the days when I would irresistibly be attracted like a moth to my local neighbourhood streetlights at dusk to watch Moorish Geckos (*Tarentola mauritanica*) — also most appositely named, Wall Geckos — 'at work'. The geckos would target, stalk and then pounce upon the unsuspecting moths (in a totally surrealistic way, of course!), while I, in turn, targeted and stalked the geckos. . . but never laid a finger on them.

Nowadays, I still get to see these small, lightning-fast, acrobatic Mediterranean lizards a few times every year. In the meantime, I resort to making them the first species on my list when checking out a new lizard book. I was therefore more than delighted to see that *Keeping and Breeding Geckos* not only has two excellent colour photos on pages 162 and 163, but even affords the species the rare luxury of nearly three pages of valuable space. Great!

Of the 186 pages that go to make up this superlatively illustrated book, no less than 135 are dedicated to the species section. This is, in my opinion, the best collection of gecko species and photographs ever gathered within the covers of a book of this size.

Were the preceding sections anywhere as comprehensive, then it would be difficult to fault *Keeping and Breeding Geckos*. However, other sections such as those on *Gecko Terraria and Their Accessories, Diseases and Parasites and Foods and Feeding* are nowhere near as strong as the species 'catalogue'. How, for example, do you deal with mice colonies for large geckos or — most importantly — do you feed live baby pink mice to these species, or do you adopt a more ethical approach (like using an alternative food)? These and other important questions are left untackled — a bit of a blemish on what is, otherwise, a fantastic book.



In his introduction, John Coborn, the author of *The Atlas of Snakes of the World*, says:

"This book is not intended to be a field guide to the snakes of the world, but should be used in conjunction with a good guide to the area from which the species or genus originates (if such exist)."

When I read this, I thought, "Field Guide?" Humping this heavy book (I weighed it — it weighs 9½lbs!) about on some field trip is not very likely to give you a lot of help . . . it'll give you a hernia, though!

On a more constructive note, this book has everything for the snake lover. . . and I mean everything. Most books, for example, would merely refer to the availability of albinos of certain species and illustrate either the wild-

type or the albino, or — if you're lucky — both. Here, we have, for example, 'normal' albinos, amelanistic albinos, red morphs and wild-types of Corn Snakes (*Elaphe guttata*) — all mentioned in the text, and all illustrated.

What about the golden (albino?) form of *Python molurus bivittatus*, or the melanistic two-headed *Rhabdophis tigrinus*, or the various stages of birth in the viviparous Puff Adder (*Bitis arietans*) and Copperhead (*Agkistrodon contortrix*), or copulation in various species of snake, or...?

Something else that struck a positive chord with me was the inclusion of an, albeit brief, discussion of the ethics of feeding live birds and mammals to snakes. Any book that does this is worth a few extra points. What a shame, though, that the same consideration has not been extended to the so-called lower vertebrates like fish. In fact, the author says: "Some (snakes) can be trained to take dead fish or even strips of fish meat, but it is best to give live freshwater fish wherever possible".

I can't agree with this, but recognise that it's probably just my personal hang-up regarding the feeding of live vertebrates to other live vertebrates.

The *Atlas of Snakes of the World* sets out to "illustrate some of the difficulties experienced by amateur and professional herpetologists in finding particular information on snakes and their husbandry."

I think that — over its 557 pages (excluding the Bibliography and Index) — it fulfils most of its aims beautifully.

It's big, it's heavy, it's colourful, it's

informative, it's almost perfect, and I have to agree with the author: It ain't no field guide!

And now to the real heavyweight. Coming in at a combined total of a staggering 12½lbs, the two volumes of *Reptile Care — An Atlas of Diseases and Treatments* by Fredric L. Frye, aim to bring together "the very latest understanding about the diagnosis and treatment of disease and injury in reptiles."

It's difficult, particularly for a 'non-vet' like me, to debate whether this has been achieved or not. My feeling is that it has... and with vengeance.

Just to give you an idea of the extensive ground covered, here are the contents:

Volume 1. Introduction; Captive Husbandry; A Practical Guide for Feeding Captive Reptiles; Fungal, Actinomycete, Bacterial; Rickettsial, and Viral Diseases; Pathologic Conditions Related to the Captive Environment; Radiology and Imaging; Haematology as Applied to Clinical Reptile Medicine; Applied Clinical Nonhaemic Parasitology of Reptiles; Index.

Volume 2. Ophthalmic Conditions; Reproduction in Reptiles; Developmental Anomalies; Anaesthesia; Surgery; Comparative Histology; Euthanasia and Necropsy; Common Pathologic Lesions and Disease Processes; Antibiotic Therapy in Reptile Medicine; Glossary; Index.

Can you think of any other major topics? I have to admit that I would be hard-pushed to do so. And when a well-qualified vet like Dr I F Keymer says that *Reptile Care* is "a masterpiece that sets high standards for veterinary

textbooks", it's hard to argue.

Mind you, if I were Dr Douglas R Mader, the author of Chapter 17 — Antibiotic Therapy in Reptile Medicine I'd feel most disappointed to discover that my name was missing from the Contents of such a prestigious book (he is, however, credited on page 621 at the beginning of his chapter).

Two other authors have contributed to *Reptile Care*: Drs Alex Rübel and Walter Kuoni who co-wrote the chapter on Radiology and Imaging with the main author. To Frederic Frye must go the bulk of the credit, though, for a monumental, masterful piece of work that should forge new frontiers of health care in reptiles, particularly among practising vets and all others seriously involved in herpetology. **John Dawes**

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Focus on: Herpetology



A male Dwarf Chameleon (*Bradypodion* sp) barely 3.5in (9cm) long.

SUCCESS WITH CHAMELEONS

Part 1

Robert and Valerie Davies begin a series of three articles on these enthralling lizards.

Photographs by the authors

Chameleons have always had a reputation for being difficult to keep and short-lived in captivity, but now a few enthusiasts are having reasonable success at propagating them, and the signs are far more encouraging. This is not to say that chameleons are easy, of course.

Much of the trouble has been due to overcrowding during transit, since these are solitary animals and are soon stressed, especially when males are caged together. They are usually dehydrated on arrival and, since most will not drink from a dish, they will deteriorate further unless sprayed or given water from a dropper. Some specimens may also be heavily parasitised which, combined with the other factors, leads to their early demise. Recently, specimens have arrived in better condition (packed separately) so, with proper care, chances of survival are much greater. Some six species have been bred in this country so far.

GENERAL FEATURES

Most chameleon species are arboreal (tree-living) and have evolved special features for this kind of life. These include a prehensile tail, eyes with independent movement, a

long 'sticky' tongue (in some species twice the length of the body) and divided feet which can grasp branches. The tail is often used (with the rear feet) as an anchor so the animal can stretch out to reach its prey. The tongue is actually moist and works rather like a rubber sucker.



An adult male *C. bitemaculatus*. Note the crest of spines running down the back.

Except for three or four species, chameleons have a laterally compressed body which helps concealment, facilitates movement between leaves and provides a large area for heat absorption from the sun's rays. Many can flatten the body even further to intimidate rivals or predators. Finally, the basic colour tends to be greenish or brownish which further helps concealment.

The ability to change colour is not as great as often imagined, though. It is governed by the animal's temperature, mood or state of health, and each species has a limited range of colour changes. A specimen that is ill tends to be a uniform dark or a sickly yellowish colour. Dark coloration is often used to absorb heat more quickly.

Colour is also used in communication — some males displaying to females or rivals can often produce really bright colours. Our female *Chameleo senegalensis* turned from uniform light green to vivid green with yellow blotches after she had mated — possibly a signal that she was no longer 'available'.

The eyes protrude from the head and are almost completely covered in skin. They move constantly to give 'all-round' vision to spot prey or predators. When prey is spotted, both eyes focus on it, the tongue is extended and the prey is drawn up into the mouth. Some species have various adornments, such as horns, casques, flaps of skin, nasal appendages etc. Rival males of horned species will often interlock horns and try to throw each other off the branch.

Much time is spent motionless, and movement is usually slow and deliberate, often with a quaint backwards and forwards rocking motion. However, some species can move quite quickly if they have to.

Chameleons are not the most sociable creatures and tend to maintain their territory by means such as colour changes, gaping jaws, inflation of the throat pouch, head bobbing or shaking, rocking from side

to side and, if necessary, biting with varying severity. So, although comparatively defenceless, these features have enabled them to survive for a long time.

As with most animal groups, taxonomy is in a permanent state of flux. It would seem that there are between 70 and 100 species, all found in the Old World. The island of Madagascar and Africa are quite rich in the number of species. One species is found in Southern Europe, while India and Sri Lanka also possess chameleons.

Habitats vary from hot, dry areas to rainforest, and some species live at high altitudes, tolerating very low night temperatures and relying on the sun's rays to activate them the following day.

OBTAINING A CHAMELEON

Unless one knows how to distinguish a healthy chameleon, impulse buying can be disappointing, the animal dying soon after purchase. The eyes are a good indicator of health. The globular eyes should fill the sockets. Any sign of sunken eyes means that all is not well. A healthy specimen should also have active eye movement, continually scanning its surroundings. Eyes closed for long periods are a bad sign.

Chameleons with swollen limbs, other swellings, scabs etc. should be avoided, as should any which have inflammation or caseous ('cheese-like') material in the mouth, and any which do not have a firm grip. Although we have never had a chameleon infested with mites or ticks, these may be present — mites around the eyes and ticks in the armpits. It is possible they have picked these up in transit and, since it is difficult to treat a chameleon for mites, such specimens should be refused.

A sick chameleon may be a uniform dark colour (this may, however, be due to low temperature), but some species turn a horrible yellowish colour when sick. Look carefully for broken limbs which may have occurred if the animal was roughly collected.

Emaciation, especially at the base of the tail, means the animal has not been fed for some time. In some species a faint outline of the ribs is visible as the animal breathes but, if sharply outlined, it is another sign of under-nourishment.

Younger specimens tend to have a better chance of survival, usually carry fewer parasites and, in any case, can expect a longer lifespan than an adult, which may be quite old. Gravid females, although tempting, often become egg-bound, or abort their young (livebearers) and may die shortly after. Finally, some species may have parasitic sub-cutaneous worms. These are visible, resembling varicose veins, and are virtually impossible to treat, so try to avoid any chameleons which are seen to be infested, as the infection usually proves fatal.

SELECTED SPECIES

These descriptions are necessarily brief because of the difficulty in describing coloration. The photographs in all three parts of the series give a better idea.

① Livebearers (ovoviviparous species)

These chameleons are mainly from high altitudes, where they are subject to low temperatures, even near-freezing, but, as mentioned later, this is not desirable for captive specimens.

Bradipodion spp (Dwarf Chameleons)

At one time, these were lumped together as one species, *Micranura pumila*. However, some taxonomists recognise about 20 species, mainly found in Southern Africa, but also extending into East Africa; they are rarely imported now.

Our colony has been breeding for a number of years. Total length: 9–18cm (3.5–7in) (according to species). Successive generations of young have shown a reduction in size, even though we have been careful not to in-breed. Males are slimmer and more colourful than females.

Temperature: 15°C (59°F) to 28°C (82°F). Above 28°C, they show signs of discomfort. These dwarfs are quite hardy and live outside in summer. Gestation lasts 95–100 days. Ours have produced a maximum of 11 young, but they are reputed to have large clutches. Gravid females are usually intolerant of males.

Lifespan in the wild is stated to be about five years and our captive specimens have borne this out. A slight reduction of temperature in winter is desirable.

Chameleo bitaeniatos complex

This complex includes *C. bitaeniatos*, *elliotti*, and *radus* which are closely related forms with overlapping ranges and are found in Burundi, Ruanda, the Congo, Uganda, Kenya and Tanzania.

All possess at least one stripe down the side and show a pattern of lateral blotches and diamond-shaped saddle markings. The length of the males is 15–16cm (6–6.5in), females slightly less. Several colour forms exist within this complex; males of *C. elliotti* may be very attractive.

Temperature: show signs of discomfort above 29°C (84°F). Night temperature can fall to 15°C (59°F). All may be housed outside in summer.

Gestation: 100–160 days. Our pair of *C. elliotti* have produced clutches of 11 and 14 young, while *C. bitaeniatos* produced clutches of 10 and 12. Females tolerate males even when gravid. Consignments may contain a mixture of all three species.

Chameleo hoehnelii

This species is sometimes called the High-casqued Chameleon, as males have a higher casque at the back of the head than do females. It has also been classified as part of the *C. bitaeniatos* complex, as the patterning is similar. This species also possesses a curious upturned snout.

Large numbers used to be imported from Kenya, but these are not now generally available. Several generations have been bred in Europe and it is now being bred in the UK. Mature males are more colourful than females, often showing greenish and



Although female *C. hoehnelii* have less pronounced head adornments than males, they still show why this species is known as the High-casqued Chameleon.

yellowish-orange markings. Length is approximately 15cms (6in).

Temperature: 25°C (77°F) is adequate. Night temperature can drop to the low 50s°F, and may go even lower in winter.

Gestation: 100–160 days. Normally, a pair will live happily together, and clutches may contain as many as 20 young. This is a very hardy species found at high altitude and forms an ideal subject for an outdoor set-up.

Conclusion

All the above species have been bred in a 60 × 30 × 30cm (24 × 12 × 12in) vivarium, but slightly larger and taller quarters would be better.

② Egglayers (oviparous species)

We only keep the medium-sized egglayers as the large species such as *C. oustaleti*, *C. pardalis*, *C. melleri* etc. need large vivaria and lots of large live food. For the following three species, a vivarium with a base 51cm × 51cm and about 76cm high (c.20 × 20 × 30in) has proved adequate, since the males are removed after mating.

Chameleo senegalensis

This is one of the most commonly imported species but is not usually recommended because of the poor state in which specimens arrive. This is probably due to stress brought on by overcrowding. On arrival, many individuals are heavily parasitised, especially with sub-cutaneous worms.

This species is widely distributed across Central Africa, from Ghana in the west, to Kenya and Tanzania in the east, and from Sudan in the north, to Zambia in the south. Males measure approximately 20cm (8in) and are slimmer than females 24cm (9.4in).

Daytime temperature: 30° (86°F); night:

Continued on page 50

Continued from page 44

15°C (59°F). These chameleons require somewhat higher humidity than other species. We have not yet managed to breed this species, despite having witnessed two matings — the first lasting about two hours.



In *C. senegalensis* females change to this dark spotted pattern after mating.

After mating, the female is very intolerant of the male, so he has to be removed.

Chameleo (= Furcifer) lateralis

Sometimes known as the Jewel Chameleon, both sexes are quite spectacular. *C. lateralis* hails from Madagascar, where it tolerates a wide range of habitats eg. rainforest, dry forest, moist grassland. Ours have thrived well in captivity in comparatively dry conditions with one daily spray.

This a very active chameleon which can

move speedily when necessary. Males reach 25cm (9.8in), females slightly less. The vivarium has occasionally reached 32°C (c.90°F) with no ill-effects but 30°C (86°F) should be the maximum. At night, the temperature drops to 15°C (59°F). In winter, a further slight reduction is desirable.



The Jewel Chameleon (*C. lateralis*). This is an adult male.

Gestation: 30-50 days. Our clutches have contained 10 and 12 eggs. Incubation may be between 160 and 370 days (see section on Breeding — Part 3). Males will persistently attempt to mate even when the female is gravid, and are therefore better removed.

Chameleo johnstoni

This species is often confused with the livebearing *C. jacksoni*, but since the latter is not now imported, any three-horned chameleons for sale will be *C. johnstoni*. It is

found in the Central African highlands between 1000 and 2000 metres.

The basic colour is green—often two-tone, with lighter patches on the side. The female lacks the horns of the male and has a yellow-to-orange patch along the upper lip. Gravid females tend to be intolerant of males.



Gravid coloration in *C. johnstoni*. Note the orange pigmentation around the mouth.

This species seems to need a fair degree of humidity. Temperature: there is a disagreement over maximum temperatures; however, above 25°C (77°F) our specimens seemed unhappy.

Since mating has not been observed, we are uncertain of the gestation period for *C. johnstoni* but think it could be 10-14 weeks. Incubation is about 90 days, but can take longer. Usually, 10 to 12 eggs are laid, but we have had clutches of 15 to 20.

(TO BE CONTINUED)



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CAPTIVE CARE

As captive animals *Pipa pipa* are relatively easy to care for. They are totally aquatic and are best kept in pairs in a large aquarium of around 100 l (c.22 gals). A layer of fine gravel or sand should cover the base and it will be necessary to install some kind of filtration system. One can either use undergravel filtration or an internal power filter.

You will also have to maintain the water at a temperature in the region of 24–28°C (75–82°F); a normal aquarium heater will prove suitable for this. One must, however, build some kind of cover to prevent the toad from coming into contact with the heater, thus suffering severe burnings.

With regard to decoration, I would be inclined to limit this to very hardy plants which will withstand the daily rigours of regular knocks, a few rocks and, perhaps, several pieces of bogwood.

The natural haunt of this toad, as I have already mentioned, is on the riverbed, where visibility is very poor. This, coupled with the toad's poor eyesight, allows the herpetologist to limit the amount of light he or she illuminates the aquarium with. In other words, subdued lighting is more desirable than glaring light.

Feeding presents no problems with this toad, with a varied range of foods being taken. The staple captive diet is provided in the form of earthworms (which are swallowed with relish), although dietary requirements also cover: small whole fish,

strips of fish, meat, heart and any aquatic invertebrates you can lay your hands on.

It is particularly interesting to watch this toad deal with earthworms. They are eagerly manipulated into the mouth with the front feet, like a spaghetti-eating contest. All food is pounced on with lightning speed once detected.

BREEDING

As with many captive amphibians, breeding is a common occurrence in the Surinam Toad. Unfortunately, sexing of non-breeding pairs is somewhat difficult. The most reliable means of this, are: the female has an extendible, slightly tubular ovipositor, and the males vocalise an audible clicking which can be clearly heard through the aquarium glass.

During the breeding season, which one can induce by raising the water temperature by a few degrees and then suddenly dropping it, the toads become very active and begin to quiver when they make contact with one another. Many people regard this quivering as a means of sexual display. While this may be true in some cases, it is by no means reliable, for males will do it to other males, and females to other females.

A successful mating takes place when the male grips the female around her middle (a position called amplexus) and begins to squeeze her until her ovipositor lies between their bodies. The pair then begin to do repeated somersaults in the water.

During this somersaulting, the female releases several small white eggs which the male fertilises. Once the eggs are fertilised, the male manipulates them up onto the female's back where they stick. This process will be repeated several times until around 50 to 100 eggs have been placed on the female's back.

Twenty-four hours after the placing of the eggs, the female's back tissues will begin to swell and envelope the eggs. By the 9th or 10th day the eggs are fully embedded in their own individual cavity, where they remain and develop until the point of metamorphosis — on average 12 to 20 weeks. On metamorphosis, the young toadlets break free of the membrane-enclosed chamber and emerge as perfect miniatures of their parents.

Once hatching has taken place, it is essential to remove the toadlets to a separate aquarium, otherwise they will be eaten by the adults. It is also important for the successful rearing of the young, to have a good supply of earthworms, *Tubifex*, bloodworms and other aquatic invertebrates at the ready. Successful raising of the young is dependent on good water quality.

YOUR QUESTIONS ANSWERED

If you have any queries relating to reptiles or amphibians write to Julian Sims (Your Questions Answered), c/o the Editor.

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Coldwater jottings

By Stephen J. Smith



HEATING DEBATE

I have been heartened by the initial reactions received in response to my comments on low-temperature heater-thermostats for coldwater fishkeepers (see *Coldwater Jottings*, October, 1991: *Coldwater Nightmare Scenario*).

Several people have caught up with me during my visits to aquatic events, while a number of letters have also shed some light on your thoughts, as well as those of some manufacturers.

Generally, it looks as though there is good news for coldwater enthusiasts, especially when companies such as **Simply Control** respond so enthusiastically (despite their admission that they only encountered the magazine through a friend).

Mike Nash, a partner at **Simply Control**, explains that his company manufactures a range of controls to regulate the temperature, humidity and light levels for many industrial and horticultural applications accurately.

Of particular interest to coldwater aquarists is an electronic frost thermostat with a range of 0-21°C (32-70°F), housed in a splash-proof case with a low voltage remote sensor.

From my conversations with Mike it would appear that this arrangement, manufactured for the horticulture industry, may well be suitably adapted for the aquatic hobby. Watch this space for developments...

Andy Millar, an electronics design engineer based at Witney in Oxfordshire, sees no problem in making a system to

solve the 'frost' problem.

Writes Andy: "It seems that all you require is a thermostat to turn on a standard aquarium heater when the water temperature drops below 8-9°C (c 46.5-48°F)". Andy would be willing to work with a manufacturer to develop a prototype so, again, watch this space...

A novel alternative is provided by **Richard Inskip** in Leeds: "As always, there is more than one way to control a heater. What about connecting a 25 watt heater to a timeswitch? I have a timer which will switch a 13 amp load every 15 minutes on a 24-hour cycle. With a little trial and error, you will soon find out how often the heater needs to be on to achieve the temperature you require".

Thank you for your responses, and do keep them coming.

Simply Control, 68 Roman Way, Andover, Hants SP10 5JJ. Tel: 0264 334805.

Andy Millar, Electronics Design Engineer, 9 Greenwich Lane, Leafield, Witney, Oxon OX8 5QR. Tel: 0993 878176.

WAKIN PUZZLE

The Wakin is the traditional Goldfish of Japan, according to

in Japan as they used to? And, a final question: If the Wakin is essentially a twin-tailed version of the Common Goldfish, should its anal finnage be paired or single...?

I look forward to receiving your views.

JUDGING STANDARDS

Who, in their right mind, would ever wish to be a judge at any fish show? And, worse, who on earth would wish to judge Fancy Goldfish?

Judging is a thankless task at any time, and to judge Goldfish on the showbench is well-nigh impossible. This situation is compounded by the inconsistency of Goldfish standards. Although moves have been afoot for the past couple of years between the major Goldfish societies in the UK to rationalise the standards, wheels do grind exceedingly slowly and, with the increasing popularity of 'new' Goldfish varieties, it would appear that the hobby is outpacing its representatives.

Thus, judges are faced with the impossible task of judging fish which they may never previously have seen on the showbench, and for which there are no published standards.

judged against Jikin, Panda, and other newcomers in an AOV (any other variety) class.

The situation is even worse when judging Goldfish in a 'tropical' fish show. Such events, traditionally, have only two classes for Fancy Goldfish: Twintail and Singletail.

And, if the fish is not in the Standards book, many judges will not acknowledge its existence (ie: a Blue Oranda will receive very few marks for colour, because it isn't red, which is the standard colour for an Oranda).

The upshot of such confusion is that the hobbyist who wishes to keep and develop a strain from a 'new' variety may well become disillusioned and may either give up the strain or, worse, the hobby; leaving only the die-hard Goldfish keepers with 'traditional' strains of Goldfish.

So, two things are called for in order that Goldfish can be judged according to their individual merits and for the hobby to develop: the setting of comprehensive Goldfish standards for all UK specialist societies, and their adoption by the general fishkeeping bodies; and, in the meantime, a recognition by judges at 'general' fish shows that Goldfish varieties extend beyond the Standards book, which, after all, can provide only a guide to the perfect Goldfish, and to which Goldfish keepers can only ever aspire.

Finally, a plea to Goldfish keepers, despite my opening remarks on this subject: there appears to be a dearth of Goldfish judges throughout Britain, so how about presenting your knowledge and experience to fishkeeping societies in your region? One of the main criteria for show judges is that they are fully conversant with the characteristics of the species and/or varieties they are judging, so I am sure your approach will be greatly appreciated, while the involvement of new blood will also be of great benefit to the hobby.

AND FINALLY...

Best wishes for the New Year and a happy and successful forthcoming season.



A fine specimen of a red and white Wakin, a Goldfish variety which, sadly, appears to be dwindling in popularity in the UK (see Wakin puzzle).

many references on the subject. Yet, there appear to be very few Wakins in existence in the UK.

Why is this so? Are Wakins difficult to get hold of? Do they still hold the same importance

For example, if you had never seen a Hamanishiki before, how would you judge it? As a Pearlscale? As an Oranda? Therefore, because there is no standard, it ends up being





Sinogastromyzon wui in typical posture on an algae-covered rock.

THE ~~CHINESE~~ FIN SUCKER

Bill Tomey's latest 'occasional' introduction focuses on an attractive species of Hillstream Loach from China.

Photographs by the author



An unidentified, recently collected *Gastromyzon* species. This is probably the first-ever photograph of this new species.

The Chinese Fin Sucker is a Hillstream Loach (family Homalopteridae), a group of small fishes (up to 12cm — 4.7in) distinguished from other loaches by their adhesive paired fins, subterminal mouths and three or more pairs of barbels. All species are native to freshwater torrential streams from India to China, including Malaysia and Borneo.

BASIC INFORMATION

Family: Homalopteridae.

Subfamily: Homalopterinae, distinguished from the *Gastromyzontinae*, by the possession of two or more branched anterior rays in both the pectoral and pelvic fins (in the *Gastromyzontinae* there is only one unbranched ray).

Scientific name: *Sinogastromyzon wui*.

Common name: Chinese Fin Sucker.

Origin: China; Kwangsi Province.

Sexual differences: Unknown; both sexes are similar in shape and colour. However, males seem to show some red markings on the upper lip and might have somewhat larger and broader fins.

Social behaviour: Absolutely peaceful in every respect, individual specimens sometimes defending their 'own stone' a little bit. However, real fighting is never observed. These are fishes with a very own and interesting lifestyle, always in search of food along the aquarium sides. This species is worth keeping in what we call a 'species aquarium' imitating its natural surroundings.

Maintenance: Moderately easy, especially in tanks where spotless clean panes are absent, since these fishes like to cling, glide, move and feed along a glass surface that is overgrown with the usual transparent, somewhat slimy film which develops in every fish-populated tank. In nature, these rheophilic (preferring to live in flowing water) fish are found in running waters, liberally strewn with the smooth rocks and boulders on which they live.

Breeding: So far unknown; presumably, eggs and brood are hidden under boulders.

Food and feeding: 'Fur-eaters' (ie) filamentous algae, scraping off soft algal 'fur' teeming with the smallest water organisms like *Vorticella*, *Paramecium*, Rotifers, etc, from the surface of boulders. Most times this 'fur' is not present in aquaria and, therefore, *Sinogastromyzon wui* will quickly track down flaked food soaked to a soft substance in the aquarium water, eating this willingly.

pH and temperature: pH 6.8-7.2; temperature between 22° and 24°C (c 71.5°-75°F).

COMMUNITY TANKS

In a community tank supposed to accommodate a number of the usual aquarium fish, Sucker Fins will certainly remain alive for some time. However, they will never be able to show their very peculiar characteristics, nor their breeding behaviour. Neither are they likely to survive their full life-span



Typical Hillstream Loach habitat in Sarawak.

which, could be up to 6 years.

Quite a number of 'Sucker Fins' have been on offer in Holland recently, such as members of the genera *Hemimyzon*, *Gastromyzon*, *Homaloptera*, *Pseudogastromyzon*, *Formosiana* and *Praeformosiana*, *Glanopsis*, *Crossotoma* and a number of species which seem not to have been identified yet.

Nearly all of them accept dry flaked foods and pellets willingly very soon after arrival. Initially, they seem to need other fish in the vicinity, like some harmless cyprinids, to feel more safe, and they then start browsing.

I am convinced that these fishes deserve a

better fate than to be kept in a community tank, and have, therefore, designed an 'environment tank' to meet their physical and environmental requirements.

'ENVIRONMENT TANK'

Based on experience, a tank for these very interesting fish could, for example, be furnished over the back with a thin wall consisting of slates and a bottom layer of coarse yellow-brownish river sand.

From a corner, a high pile of smooth whitish boulders should fan out over the

bottom gradually, hiding a water pump or filter outlet. The powerful water circulation, finding its way blocked by the boulders and seeking the line of least resistance, will be jetted automatically through the canals between the boulders thus imitating the natural flow of water in a brook or stream.

Sufficient light will soon simulate the development of soft algae and accompanying organisms, further enhanced by strong reflection of the bright surface of the boulders. Sucker Fins browse frequently on such algae patches, clinging on to the boulders with their specialised horizontally-implanted fins. They always tend to move against the flow coming from the boulders by placing their body so as to cause a downward pressure that facilitates their scraping activities.

The tank could be completed with long-stemmed aquatic plants waving and undulating in the water flow. During the preliminary stages in the development of a special environment aquarium, there will be insufficient algae to sustain these fish. In this case, some boulders from a small river or brook may prove invaluable. Adhesive food tablets and pellets may provide another source of food and, in spite of their specialised nature, *Sinogastromyzon* will gradually accept nearly all other foods available.

Once they are adapted to their new captive environment, they will prove to be fishes with a very interesting behaviour. Who will be the first aquarium hobbyist to breed them successfully?

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Have you ever wondered why...

CICHLIDS EAT THEIR EGGS?

Mary Bailey investigates this frequent and hard-to-fathom-out characteristic of many cichlid species.

Photographs by the author



A female Krib (*Pelvicachromis pulcher*) with her fry. Males are sometimes unresponsive to the females' advances and fail to fertilise the eggs.

You have taken up the fascinating hobby of fishkeeping. You are 'afflicted' with the usual subsequent urge to breed something. You have watched your Zebra Danios scatter eggs everywhere for the other fishes to eat, and your livebearers turn round and polish off their own newly-born fry.

Somewhere, you have read, or perhaps someone has told you, that cichlids look after their eggs and young; you have also heard that they may take on the character of Attila the Hun in the process, but the longing for the patter of tiny fins gets the better of you, so, after a little research on just what you are letting yourself in for, you acquire a pair.

A few weeks (or months) pass and the female ripens; the pair display, clean a spawning site, and, oh joy, you have eggs. Then you can find they have eaten them. "Blame it all on the Kribs," you scribble as you prepare to bid a cruel world farewell. . . .

Seriously though, while egg-eating (and fry-eating) can sometimes present a most distressing problem to the aquarist, this behaviour (like most other cichlid behavioural difficulties) is not intended to annoy and frustrate, but has important underlying causes,

and taking a look at these may suggest remedial action, or at least let us understand the why of it.

SUBSTRATE SPAWNERS Identifying the culprits

First and foremost, make sure that it is really the parents that have eaten the eggs. Obviously, there is *prima facie* evidence if the species is a mouthbrooder, or if you actually see the eggs going down. But if you leave the parents happily guarding and fanning at lights out, and find the eggs have gone next morning, it is far more likely that the culprit is that innocent-looking little *Corydoras* ferreting around on the bottom.

Or, if your cichlids are on a larger scale than community tank size, that 'Pleco' you bought to keep the algae down will probably have taken the opportunity for some extra protein. The world is full of frustrated Oscar-breeders who have never made this connection!

The truth of it is that some cichlids are totally inactive at night, and all are far less active than during the day. It may also be that they are unable to see in the dark, though this has not, as far as I know, been scientifically proven.

Catfish, by contrast, are generally nocturnal. In nature, the cichlid solution to this problem is to keep moving their fry from pit to pit, leaving behind them numerous empty pits, sometimes including unused ones. Any passing catfish will then have a selection of 'cichlid-scented' pits to investigate, and statistically, this reduces the chances of the occupied one being found. In the aquarium, however, there is a limit to the number of pits that can be dug (contrary to appearances!), and the catfish is not just passing by, but ever-present.

So, what can be done to remedy this? Well, an obvious starter is to remove any catfishes. If this is impracticable (beautifully planted tank, nowhere else to put them, etc) then an alternative is to leave a low wattage light on all night near the tank, so that the cichlids can see to guard their spawn. This should, however, be regarded as only a make-shift solution, as fishes need their rest, and if you have two or three pairs spawning one after the other, you might end up with the light on permanently, to the detriment of the fishes' health and that of your electricity bill.

Cost effectiveness

There are several situations in which substrate-spawning cichlids will eat their eggs because they do not 'consider' it 'cost-effective', in energy terms, to persevere with a particular clutch. It may be that the number of eggs, or fertile eggs, if the cannibalism takes place at the hatching stage, is not large enough to offer the fishes a reasonable statistical chance of doing what breeding is intended to do — perpetuate their genes.

While you and I know that there is a very high survival rate of tank-bred fry surviving, in the wild state (and that is what has shaped the instincts of a species) the likelihood is that, out of a brood of several hundred, only half a dozen, or fewer, will survive to breed. So, if optimum brood size is, say, 500, and only 100



A Jack Dempsey male (*Cichlasoma octofasciatum*) with eggs. These fish normally make excellent parents which, unlike Angels, have not been subjected to artificial hatching methods. Note the small patch of infertile eggs presumably missed by the male.

wrigglers hatch, the likelihood of perpetuating the parental genes is greatly minimised. The rearing of fry requires a great amount of energy on the part of the parents, and in this situation it is better to abandon the attempt, recycle the valuable proteins contained in the eggs, and try again.

The smaller, and shorter-lived the species, the more likely this type of cannibalism — some Apistogrammas, for example, are effectively annual fishes, and will have time to raise only one, or perhaps two broods, in their single breeding season.

Interestingly, mouthbrooders do not appear to eat their spawn for this reason; their broods are usually relatively small anyway, as the incubation process immediately ensures a greater chance of survival for the fry — but clutches as small as two to five, in a species normally producing 30-50, will be incubated to term.

Disturbances

The energy consideration may also cause a pair to eat their eggs/fry if they perceive an immediate threat likely to destroy their brood. This might include the presence of an obvious predator, or, more likely, some serious (as perceived by the fishes) disturbance in the tank. This could include maintenance work, disturbance of the parental cave by the aquarist (the temptation to peep should ALWAYS be resisted), or even a water change.

If your natural habitat is a small calm pool, you may not take kindly to the sudden equivalent of Niagara, so the sensible breeder runs, siphons, or pumps water in slowly and well away from the spawning site, and likewise avoids any other major disturbance.

Having said all that, when I moved house some years ago, necessity led me to transport a pair of *Julidochromis ornatus*, plus flowerpot, plus eggs in a bucket, and they took it in their stride, change of water and all. But this species is a 'trickle spawner', laying frequent small clutches, so they were not putting all their eggs in one basket (bucket?! — Sorry!).

Environmental constrictions

Other reasons for egg-eating may be found in the constrictions imposed by the aquarium environment. If a pair have mated through necessity (put together at the critical time), rather than choice (offered a selection of potential mates), then the normal protective behavioural responses may not be released.

In nature, cichlids choose their own mate, and even where the male (or sometimes female) has already chosen a spawning site, this will have to be approved by their new partner, and then both will set about the final preparations for the brood. We see this happen in the aquarium where a pair has formed naturally from juveniles grown on together. The two fishes follow the successful behavioural pattern established by their species over many generations, and they, too, succeed.

If, by contrast, we have two fishes that have not had a chance to become properly acquainted (perhaps because we are unable to provide them with the space they need for this to happen without mayhem), and we introduce



Large cichlids, such as *Tilapia mariae*, may need target fish to release correct male defensive behaviour.



'Julies' (this is *Julidochromis regani*) are normally trickle spawners i.e. they lay regular small batches of eggs. They are unlikely to eat their offspring, but sometimes undergo bloody 'divorces' if upset.

them only when the female is ripe to bursting, then we have a totally different situation.

They will, indeed, spawn, but without that all-important preliminary activity that bonds them together for the purpose of rearing fry. Once the moment of passion is over, the male may turn on the female, or on the eggs, or else he may show no further interest in his potential offspring. The female may then eat the eggs as she 'realises' the difficulties facing a one parent family!

Obviously, this latter situation also arises where the pair are separated immediately after spawning for the female's protection. Although artificial hatching is best avoided if possible (see below), 'artificial spawning' of this type make it necessary if fry are to be obtained at all.

Useful targets

A further problem may occur even with properly mated compatible pairs if these are kept alone in a tank. Again, the problem is one of triggering correct behavioural responses. In nature there are ALWAYS some enemies to be chased away from the spawning territory, and this is usually the male's main role in the parental care.

If he has nothing to chase, then defensive

behaviour may not be released, and he may make a snack of the eggs. Alternatively, he may turn on the only available target, the female, and if she survives the experience, she may abandon or eat the eggs.

Removal of the male may result, as previously described, in egg-eating by the female, and a better solution is to give the male something to guard against: a 'target fish'. Such fishes should be large enough to constitute a real threat — it is no use expecting an 8in (20cm) male to take serious defence action against a few Neon Tetras!

It must be stressed that target fish should not be regarded as sacrificial victims, but treated properly. They should always be protected by a clear divider if there is not enough room for them to get out of the breeding territory. They should never be left unprotected for the male to batter or kill, and they should have a sensible amount of swimming space. Moreover, the fish chosen should not be one that will be frightened out of its wits by the maniac on the other side of the divider.

Internal pressures

Internal pressures may lead a female to spawn even without any cooperation from the male; this is sometimes a problem with Kribia

(*Pelvicachromis pulcher*) and other *Pelvicachromis*, where, for reasons quite beyond even my fertile imagination, tank-bred males often show little or no interest in the painted Houris trying to seduce them. (Wild-caught males, by contrast, have no such reservations, and may maintain harems, even though the books do not mention this as a facet of the genus' behaviour!)

Be that as it may, if the male is not interested, and the female nevertheless spawns, but eats the eggs, it is reasonable to assume that she has done so because she 'knows' the eggs have not been fertilised, and so takes the energy conservation course. At present, the only solution to this problem is to wait and see if the male improves with age, or replace him — but don't blame the female!

MOUTHBROODERS Infertility

In tank-bred mouthbrooders it is quite common for the first clutch to be eaten, or even the first two or three. This is probably the result of infertility, as it is equally common for a young female to carry her first clutches to term, or longer, but the eggs fail to hatch (this can be seen from the shape of the buccopharyngeal (brood) pouch, or sometimes the eggs are visible in the partly open mouth).

If the eggs are eaten, it is usually on the third day, when they should have hatched, and one has to assume that some females realise that something is amiss, while others are, perhaps, more optimistic! Interestingly, it has been my experience that a female that has once carried fry to term will not brood infertile eggs past the normal hatching time, presumably having learned what should happen; another example of energy conservation.

The most likely cause of infertility is that the male is usually also tank-bred and the same age, and while undoubtedly willing, is probably not able! I cannot recall ever having an infertile first clutch where a young female mated with an already fully adult male.

Consider: in the wild state, where there is competition for breeding territories, a young male is unlikely to be able to hold such a territory until he is full-grown and battle-experienced. In the aquarium, however, precocious territorial behaviour is common if there is no adult competition; rare if there is. The problem almost invariably solves itself, given time, failing which the obvious solution is to try another male.

Disturbance

Egg-eating can also take place if the female is badly disturbed, or if she is harassed by an over-enthusiastic male that wishes to spawn again, and again . . .

In this respect, there is tremendous variation from species to species, or group to group. In my experience, nothing short of an atomic bomb will make a female Mbuna eat her eggs, while I am currently running at a 1 in 5 success rate at moving female *Haplochromis nanus* to a brooding tank. They do not mind me removing all the rockwork and totally disrupting the tank, but the moment they are netted, out come the eggs or fry.



Mouthbrooding *Melanochromis chipohae* females usually need to be separated from males immediately after spawning to avoid harassment and possible loss of the brood.

So each case has to be taken on its merits, and you may lose a clutch in finding out the hard way. If the female is in danger, then she must either be removed, or if she is likely to eat her spawn, the male should be removed instead. With a female that can't be moved without likely loss of eggs, but which is not being harassed, then wait till she is near term (18–19 days) and then move her. It is considerably easier and less time-consuming to rear fry ejected in a bowl than to hatch eggs ditto.

HEREDITY

Finally, there is the matter of heredity, and this is perhaps the most serious aspect of egg/fry eating. In the aquarium it is a man-made phenomenon — after all, if you eat your offspring in the wild state, you don't get to pass your genes on to another generation, and any inherited problem of this sort is nipped in the bud.

Negative line-breeding

In captivity, however, our need to reproduce our fishes has led us to ignore this consideration, and we merrily set about line-breeding fishes which have egg-eating as an apparently heritable characteristic. The best-known example is, of course, the Angel, *Parachanna aulana*, which lays its eggs on just about

anything except what nature intended (Amazon Sword Plants) and then eats them. We 'solve' the problem by artificial hatching and thus perpetuate it for another generation.

Sadly, a similar pattern is emerging with some more recent imports, where the desire to produce as many fry as possible, as quickly as possible, has led some breeders automatically to remove each clutch for artificial hatching, knowing that another batch of eggs will appear in a few days' or weeks' time.

Sometimes, this is for purely laudable reasons, as with *Apinogramma nigrum*, where there were only a small number of wild individuals available, and no foreseeable likelihood of more being imported. In other cases, however, I regret to say that it seems to be done purely for financial gain.

I am personally convinced of the strong likelihood that, at least to some extent, brood care behaviour is learned; that is, if a fish doesn't experience it, it doesn't know how to perform it, or perhaps doesn't realise the need for it.

Obviously, this problem of line-breeding egg-eaters applies only to substrate spawners — the egg-eating mouthbrooder is one gulp ahead of even the most cunning and watchful aquarist! Perhaps the tendency of Angels to spawn on items like heaters and tank sides is evolution fighting back by making it likewise impossible for the aquarist to remove and hatch the eggs . . .!

Positive line-breeding

Seriously though, what we should be doing, where a species is safely established but is a confirmed egg-eater, is to select those rare individuals that still practise brood care, and breed new lines for them. What we should not do, however great the temptation, is to continue producing specimens which are, in their way, just as defective as those with spinal or opercular deformities.

So think very hard before you resort to artificial methods, especially where the species is normally a good parent. You could be starting a whole new line of egg-eaters, and depriving many hobbyists of the tremendous pleasure of watching cichlid brood care . . . yourself included.



Telogramma brichardi fry hatched artificially when the female started eating her eggs. This approach was adopted because the species had only been spawned twice in captivity. The next time, the female managed perfectly by herself.

Letters

Request for rare fish information

I am writing in the hope that *A & P* readers may be able to help me with a current study of two species of 'whitefish' which are among the rarest freshwater fishes in the UK. We have two species in mainland UK — the Vendace, *Coregonus albula*, and the Schelly (or Skelly, or Powan in Scotland, or Gwyniad in Wales!) *Coregonus lavaretus*. In addition, we have a third species in Northern Ireland (and Eire), the Pollan, *Coregonus autumnalis pollan*.

At this time, some fish die during or immediately after spawning and are subsequently washed ashore. Apparently, this can happen in considerable numbers. I am keen to hear of any such sightings made during this winter so that I can get some clues as to spawning grounds in lakes known to contain these fish, and so that I can perhaps get to hear of some 'new' localities. Briefly, our knowledge of the distribution of these fish is as follows.

The Vendace is now found only in Bassenthwaite Lake and Derwentwater in the English Lake District. I have no real

water, Loweswater and Angle Tarn in the Lake District, so any sightings from these lakes would be particularly interesting!

The Pollan is found in Lough Neagh, where it is abundant and fished commercially, Lough Erne, and the Shannon lakes of Eire, where sightings have apparently been rare in recent years.

I would be very interested to receive any information at all, from first hand observations of dead fish this winter to Grandparents' tales of days gone by!

Dr Ian Winfield,
Institute of Freshwater
Ecology,
Windermere Laboratory,
Far Sawrey, Ambleside,
Cumbria LA22 0LP.
Tel: 05394 42468
Fax: 05394 46914



The Vendace. Details of spawning sites are urgently sought.

If you've followed things so far, you can follow anything! All three species look pretty similar and the accompanying photograph of a Vendace illustrates their main features which distinguish the genus from other species — note the exclusively white (or silver) coloration and the obvious adipose ('second', small dorsal) fin. Adult size is typically up to 30cm (12in).

The reason for my writing relates to possible 'sightings' of these fish during the winter. While all of these species spend much of their time at depths greater than 10m, they all move into the shallow areas of their lakes sometime between December and February to spawn.

information on the locations of spawning grounds in these lakes, although we will be having a look with bottom sampling and a diving team this winter.

The Schelly is found in Ullswater, Haweswater and Red Tarn in the English Lake District, and Llyn Tegid (or Lake Bala) in Wales, where it is known as the Gwyniad, and Loch Lomond and Loch Eck in Scotland where it is known as the Powan. My present concern is primarily with the English and Welsh populations. I know of one spawning ground in Ullswater, otherwise I am in the dark again. In addition, there are rumours that the Schelly may also be found in Brothers-

Instructional Plea

Having read your excellent October issue in detail, it suddenly struck me that no one organises weekend instructional courses in tropical or marine fishkeeping.

Such courses would provide a fascinating and enjoyable weekend for participants. It would help them learn more about the hobby and provide them with the opportunity to ask questions from the tutors present. I would have thought that these weekends would also be of great interest to major suppliers.

Geoffrey Dalton,
Sevenoaks,
Kent.

Fluorescent Dawn/Dusk

① I refer to the article published in the October, 1991, issue and am pleased to inform you that it is, in fact, possible to dim fluorescent lights. I have such a device attached to my freshwater system.

The idea can easily be taken a step further and an in-built timer attached, making the transition from light-to-dark and vice-versa, a stress-free process for tropical or marine fishes.

I have spoken to my manu-

facturer on this subject and am pleased to announce that we would be quite happy to distribute and supply these units at a relatively low cost, if the demand is fairly high and this concept becomes popular with your readers.

Please send enquiries to me at the following address.

Linda Martin,
15 Millbank,
Ecton Brook,
Northampton NN5 5HJ.

② After reading Graham Cox's reply in *Your Questions Answered* in the October '91 issue of *A & P*, I'd like to inform you that a light-dimming unit does exist. It is available from: Sunrise Avicultural Engineers, 60 Bateman Road, Hellaby, Rotherham. Tel: 0709 545619.

Their unit (Sun 5) has been successfully used by my friend in his aviary. It can switch fluorescent tubes and bulbs automatically and dim them over a 30-minute period.

I would like to stress that I have no connection whatsoever with the above-mentioned company.

K L Farr
Ope,
Hull.

'Multi-coloured' plant cultivation

I enjoy your magazine, especially the 'instructive' side of things.

In the October issue, your editorial talks of the 'multi-coloured approach' which I thoroughly agreed with. Until, that is, I got to Barry James' article on page 67 which starts by telling me that I am either ignorant to the needs of plants or else I am just plain 'tight'.

Could it not be that some of us mere mortals don't actually have the necessary cash to spend on all the new High-Tech (and highly priced) equipment that we are now being informed is necessary for good plant growth?

I wonder how many other readers were offended, as I was, by Barry James' remarks.

Ian Offer,
Eltham,
London.

News from the societies

British Killifish International Convention 1991

Members travelled from all parts of Britain and Europe to attend the three-day B.K.A. 1991 International Convention arranged by the Manchester group and held at the Portland Hotel in Buxton, Derbyshire between 4 - 6 October. The fish also came from far and wide, including USA, Germany, France and Holland.

The twenty-sixth Annual General Meeting took place during the week-end, made notable, among other things, by the return - after a long absence - of Mike Packwood, known as "the man most active in the formation of the B.K.A."

Three slide lectures were given to members during the convention. The first was on the collection of killifish from the wild in East Africa and was

presented by John Rosenstock of Denmark. The second, on a collecting trip in Gabon in West Africa, in 1990 was delivered by Allan Brown of Bury, while the third presentation, by Wim Suyker of the Netherlands, featured his latest collecting trip in Guyana, South America. Clearly, the BKA went round the globe in a weekend!

Material from the Services Secretary was on sale during the weekend and auctions for both donated fish shown in the International Show, and for members'/breeders' fish, took place on different days.

The facts and figures of the weekend indicated the healthy state of the British Killifish Association: Over sixty members stayed at the Portland for the two nights, while some other members had to be booked into another nearby hotel. In total, over two hundred pairs of fish were benched

in the Show. The International aspects of killi-keeping were very evident at the Show, with one hundred and thirty entries coming from overseas. The main Convention event, the Saturday evening meal and prize-giving, was very well attended too.

Best in Show: *Aphyoseion dargie mbaw* owned by Robert Gunn. **Best Overseas Entry:** *Rivulus amphioxus* owned by Mr Vermeulen.

Next year's Convention is to be held in Hull. For further details contact the Publicity Officer B.K.A., A. Burge, 14 Hubbard Close, Wymondham, Norfolk NR18 0DU.

West Cornwall Fishkeepers

Many aquarists from throughout the West Country, and some from further afield, congregated at Camborne on 27 October for the West Cornwall Fishkeepers' Combined Open Show and Inter-Club Competition held at 'Blaythorne' (Hol-

man's Sports Club), Pendarves Road, Camborne.

Aquarists competed for over 50 trophies in tropical, cold-water, marine and aquatic plant classes. Trophies were presented by Mr W Rundle, of Plymouth, the noted West Country aquarist.

Best in Show and Best Barb - T Cruickshank, of St Austell, with his *Barbus gelius*. **Best Inter Club Entry and Best Catfish** - B Opie, of Falmouth, with his *Synodontis grethoppi*. **Best Cold-water Entry** - J Rundle, of Plymouth, with his *Shubunkin*. **Best Characin** - M Simpson, of Plymouth, with his *Hemigrammus unilineatus*. **Best Cichlid** - B Brooking, of Plymouth, with his *Parapomoxis zairini*. **Best Livebearers** - R Chapman, of Essex, with his *Platy*. **Best Junior Exhibitor (Most Points)** - G Hyndman, of Plymouth. **Most Points in Show** - M Simpson, of Plymouth. **The Inter Club Shield** was regained by West Cornwall, narrowly beating Plymouth. Exeter came third with a score of 39 points.



Robert Gunn receives his award for the Best British Rivulus exhibit from BKA Chairman Brian Tate. Also in attendance - Ombudsman Keith Wilbraham, a member of the organising Manchester Group.

Diary dates

Canadian Association of Aquarium Clubs

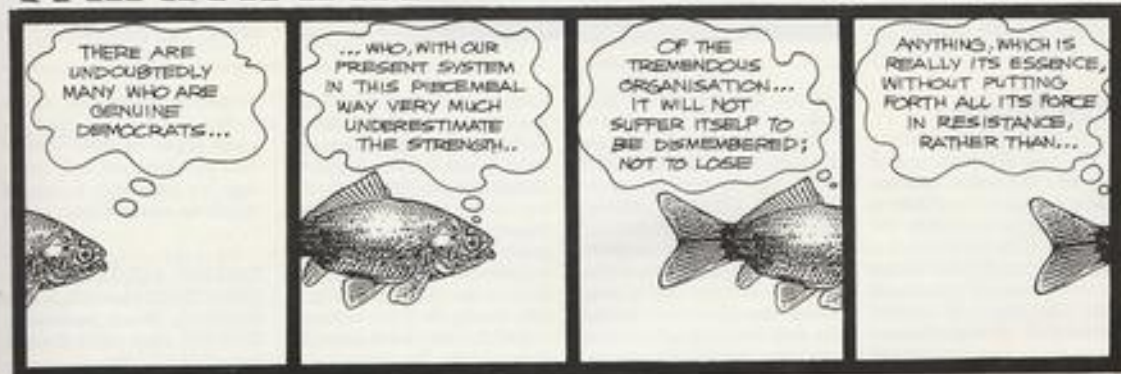
The 1992 CAOAC annual Convention will be held in Edmonton, Alberta, Canada on

16, 17 and 18 May, 1992.

For further information regarding the 'Great Wet North' Convention, contact Ken Ealey, Convention '92 Chairperson, 7731 38A Avenue, Edmonton, Alberta, Canada, T6K 3E4. Tel: (403) 461 9872.

THINKTANK

© flint & jones



PRODUCT ROUND-UP

BY DICK MILLS

Aquaprints

Afficionados of any kind of 'Pop Art' will be well-versed with the artistry that can be achieved using airbrush techniques. Gary Leedham, from AQUAPRINTS in Worcestershire, has brought this technique to bear on many of his favourite fishes, and the results are quite remarkable.

Starting off with a line drawing of the subject, the application of paint, using airbrushing, gives the final result an illusion of reality very close



Air-brushed masterpiece from Gary Leedham

to a photographic quality. Having seen some of the results, including a particularly striking

study of an Oscar, it has to be said that seeing is believing, although such are the subtleties

of the work, that much is lost in trying to reproduce a monochrome version within these pages.

To date, Gary has undertaken special commissions from private clients both in the UK and overseas, shown his work at exhibitions, and now has a series of prints which will soon be marketed nationally through aquatic outlets.

For further information, please contact Gary at: AQUAPRINTS, 7 Whitehorse Close, Lower Wick, Worcestershire WR2 4EB (Tel: 0905 421189).

Purity On Tap

They're always trying to protect us aren't they, saying "Don't complain, it's for your own good"? Take water, for instance — a convenience product for us, useful for washing the car but, lately, only seemingly fit for human consumption if you dilute it first with alcohol! And as for keeping fish in it, well, whatever next?

Wouldn't it be nice if it came out of the tap just right to use for a change? Enter those clever PURITY ON TAP people. Looking at water treatment from a real-lifesaving angle, kidney dialysis, they quickly saw that using similar technology could rid our tapwater of all its inherent, inbuilt nasties fairly easily before we expose our fishes to it.

The secret of their CB range of CARTRIDGE FILTER MODULES is powdered Activated Carbon which has a vastly increased surface area over standard granular carbons. In

addition to thus increasing its effectiveness and adsorption powers, powdered carbon also lessens the risk of 'channelling' (water finding a short cut through it). Furthermore, even if the carbon is exhausted, it won't dump back any previously collected contaminants into the aquarium water.

If a mixed media resin is added (an extra CBR cartridge) then removal of heavy metals

such as iron, copper, lead and zinc is also possible, as is aluminium sulphate (often added to water to 'brighten' it).

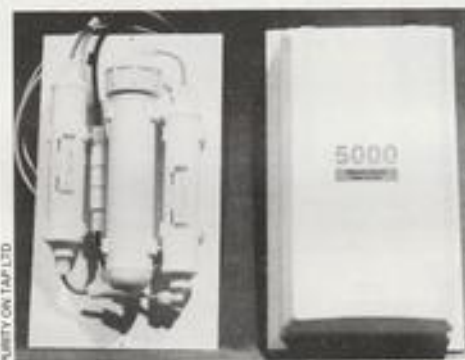
Two models are currently available, the CB 1250 and CB 6600, and both include the polypropylene sediment-removing cartridge and the powdered activated carbon cartridge; the CB6600 model also has the CBR cartridge fitted as standard. The model

numbers refer to each system's treatable gallons capacity, each rated at 0.5 gallon per minute and removing the whole spectrum of contaminants. Cartridge life is much longer if you only want chlorine removed, but increasing the flow rate proportionately shortens cartridge life. Extra cartridges can be fitted for nitrate removal.

The CB1000, a single cartridge 'starter size' filter which can easily be upgraded as, and when, necessary, will also be available shortly.

Further aids to water purification are the H5000 and H5050 REVERSE OSMOSIS UNITS featuring microscopic filtration and easy cartridge changes (99.0% chlorine and 92% nitrate removal are claimed, along with heavy metals, pesticides, etc.).

Full details and technical leaflets from: PURITY ON TAP LTD, Wickfield Farmhouse, Shefford Woodlands, Newbury, Berkshire RG16 7AL (Tel: 0488 39319; Mobile: 0831 843402; Fax: 0488 398997).



The H5000 and H5050 Reverse Osmosis Units (this is the former) feature easy-change cartridges.

King British

By the time Koi-keepers read this, their fish should be slumbering happily in the depths of their ponds; at least, they will be, if you have seen to it that they were suitably fed during the recent autumn months, in order that they will be well equipped to survive whatever winter has in store for them and

emerge fighting fit for next year.

Having foreseen the need for a special diet, KING BRITISH recently launched their WINTER LITE Koi Flakes. Easy to digest and enriched with wheat germ and Spirulina, Winter Lite is claimed to be the only product on the market which identifies (and fulfils) the need for a light diet during the winter months. Despite the

fishes' slowed-down metabolic rate, they can still be offered food, and these new flakes not only demand little digestive energy from the fish, but won't stay in the gut overlong, thus exposing the fish to weakness and, ultimately, to disease.

Look out for the striking red label on the 150gm and 500gm tubs. Inside, the flakes will provide all the nutritional elements to sustain the fish through the

winter; the flakes float on the surface and will not cloud the water either. In these days of dark mornings and early evenings it's obviously a case of switching on the Winter Lite!

Details from: KING BRITISH AQUARIUM ACCESSORIES, Haycliff Lane, Bradford, West Yorkshire BD5 9ET (Tel: 0274 576241; Fax: 0274 521245).

Aquarian

Although the new range of AQUARIUM EQUIPMENT from AQUARIAN had been announced earlier, it was not until the recent Supreme Weekend of Fishkeeping that we were able to see the entire range at close quarters.

Thanks to a happy coincidence of demand (fitting up a 3ft cabinet aquarium for Discus) and supply (the new equipment) it was possible to give a representative trial under 'real-time' conditions.

At first glance, the overall design makes good sense, with a separated power filter impeller assembly being usable as a powerhead for an undergravel filter, for instance. Designs are unobtrusive and appear to have been thought out so as to take up as little aquarium space as possible.

Added to this kind of forethought then comes the extra 'user convenience' factor. The internal power filter can be used with or without the spraybar (a rotary switch sets the pertinent mode); extra aeration can be provided via a filtered airstube (more of this later); undergravel plates can be fitted right, left or even centre-handed, as tank demands dictate. The airpump is a masterpiece in itself, not only in its own presentation — **Everything** you need is there, right down to the airline.

However, not everything is rosy once it comes down to actual use; whether it was me, whether time was pressing too hard, or whether things could be described just a little better, is hard to tell, even with hindsight, but the first thing you must do with these new products is to **read and fully understand the instructions** before you get near the aquarium itself. Without any doubt, a half-hour spent with instructions in one hand, and all the bits on the table, will pay dividends for two reasons: firstly, because of the new de-



Aquarian's newest range.

signs, you need to familiarise yourself with everything anyway, and secondly, with both hands in the tank, you can't keep drying them off in order to re-read the instructions!

I found problems in two areas. In fitting the power filter, I spent some time trying to put the extra aeration tube on the wrong stem; it should go on to the pipe located in the centre of the rotary switch for diverting the water flow. You also need to remove the cap to this pipe first (which means that it doesn't look like a pipe in the first place!). The stem I was fiddling about with was the control knob for altering the direction of flow straight out from the front of the power filter body. I think the fault here lay with the not-too-clearly-labelled diagrams in



This top view of the Power Filter shows the rotary water flow switch (rear) and the directional flow adjuster (clear plastic stem) in its curved slot.

the instructions (a victim of the trilingual translations?)

Assembling the spraybar is a wobbly affair, but the ability to extend the spraybar to suit the tank length is a bonus. Now, how about a right-angled bend connector, Aquarian? Those with triangular corner tanks will welcome the hingeable, 'stand-off' capability of the power filter bracket. Cleaning the filter medium presents no problems and, while the black plastic cover won't let you easily see when this is needed, a red flow indicator shows when too much dirt has accumulated.

Again, care needs to be taken, especially during the 'first-time cleaning' operation; removal of the filter medium chamber is by a *sideways* slide (after depressing the two release buttons) and



The additional aeration tube fits on to the pipe in the centre of the rotary switch — once its cap has been removed.

not, as might be assumed, a straight pull-off. The foam filter medium is in several parts so, by proportionately cleaning, say, only two segments each time, continuity of any beneficial bacterial life in the foam can be maintained (always use aquarium water to rinse the foam).

Fitting the new electronically-controlled heater is not without its problems either. The 'in-line' controller (no, it doesn't have to be stuck on the tank glass, nor anywhere near it, for that matter) won't go through the corner cut-outs formed by the reinforcing shelves fitted around the insides of most all-glass tanks. This is a problem because you must not disconnect the controller from the cable and then refit it.

The undergravel filter can be powered by air, or by the impeller; a tapered connector allows fitting to existing, varying diameter uplift tubes. A gravel tidy might be a wise investment, to prevent small grains dropping through the slotted base-plate if you are in the least bit concerned about this occurring.

Although the powerhead can be used to pull water through the undergravel system in the usual 'downflow' direction, alternatively, the power filter can be used in a 'reverse-flow' mode, in which case the water is pre-filtered before passing up through the gravel. The instructions with the power filter makes this operation quite clear.

Overall, the range of products (each tailored to tank sizes) is impressive and, if looks are anything to go by, there's a ready market awaiting; and, if the small niggles can be ironed out, or explained more fully in the instructions, then everyone should be satisfied.

Illustrated Catalogue and video from: AQUARIAN ADVISORY SERVICE, PO Box 67, Elland, West Yorkshire.

Ashton

In today's hustle and bustle, it seems that everyone wants instant results. If you're thinking of installing a pond, for instance, then you'll want it to take on that 'well-established' look as soon as possible. If, to this effect, you also want something that isn't too back-

breaking a task to install either, then the range of ORNAMENTAL WATER GARDEN FEATURES from ASHTON could be the answer.

Very strong, yet deceptively light, these extremely realistic designs are cast from fibreglass and caused an incredible amount of interest at last September's GLEE Exhibition. Four Waterfall features are

available — WF1: Leafy Fall and WF3: Quiet Corner, are two small pools with quite tall vertical features, while WF4: Laughing Cascade and WF6: Floral Spring, are lower-level designs.

An ornamental Bird-bath and Mill-stream (a fountain within a millstone) make up the rest of the features. For the more pool-conscious, an effect-

ive P5 Rock Face Surround is available (to fit asbestos ponds) or you can get immediate use and effect from P1, a Rock Pond in itself.

Details from: ASHTON PRODUCTS, Claylands Road, Bishop's Waltham, Southampton SO3 1BH (Tel: 0489 894666; Fax: 0489 896289).

Aquametrics

Do you remember some years ago when the talking point was how did the flake food manufacturers get the food packed into the tin so tightly?

A new fact to wonder at is how pond liners can be packed so tightly too. However, the new SUPRALENE FLEXIBLE POND LINERS from AQUAMETRICS aren't packed so small that you won't notice them in their eye-

catching display at all good garden centre and aquatic outlets. Made from UV-stabilised vinyl, Supralene liners are extremely hard-wearing and flexible, allowing complete freedom in pond design. They carry a six-year guarantee and come in seven sizes, ranging from 8ft x 6ft 6in to 14ft x 13ft.

Details from: AQUAMETRICS LTD, Curzon Road, Chilton Industrial Estate, Sudbury, Suffolk CO10 6XW (Tel: 0787 881735; Fax: 0787 71013).

Tetra

A new club for fishkeepers with a difference — TETRA CLUB — has opened its doors for membership. Launched at the British Aquarist Festival (and mentioned in *A & P* last month), over 200 members joined within two days.

Formed after research showed people would keep fish if they knew expert information was readily available, the club offers members a regular Newsletter and a special emergency 'hotline' telephone number for use with queries about water quality, stocking a tank, preventing disease, etc. Additional benefits to new members include a gift box containing samples of Tetra products, £20

worth of discount vouchers to events and attractions throughout the country and a 28-page information booklet.

Membership can be taken up on three specific levels — Tropical, Children's or Pond, and a year's subscription is £10 per adult and £6 for children. Tetra estimate that they will have 10,000 members join in the first year and hope to draw members from all aspects and all levels of the hobby; novice or expert, indoor or out, tropical or coldwater, freshwater or marine, Tetra's wealth of experience is at your disposal.

Full details from: TETRA INFORMATION CENTRE, Lambert Court, Chestnut Avenue, Eastleigh, Hampshire H05 3ZQ.



Three new members for Tetra's recently launched Tetra Club seen here with Dr David Pool.

Jerrard Bros

Get more usefulness out of your lighting by using ARCADIA LIGHT ENHANCERS from JERRARD BROS.

Unlike plasticised aluminium enhancers, Arcadia's are made from solid aluminium with an anodic coating. This combination has two advantages: there is no degeneration of reflectance over long periods of time and, secondly, there is

no possibility of water corrosion (especially in saltwater aquariums) to cause the scratch-proof reflector to delaminate.

There is sure to be an enhancer to fit your tank and whatever size fluorescent tube, as they are available in 17, 23, 29, 35 and 47in lengths and in two diameters — 1 and 1.5in.

Details from: JERRARD BROS plc, Arcadia House, Cairo New Road, Croydon CR0 1XP (Tel: 081 688 8222; Fax: 081 681 3119).



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ENQUIRIES FROM OTHER COUNTRIES WELCOME

Seaview

By Gordon Kay

'GYNAECOLOGICAL' DOLPHINS

London gynaecologist Doctor Gowri Motha is taking some of her patients to a dolphin sanctuary in Florida in an attempt to prove that the mammals can cure unexplained infertility. Four couples have already signed up for the £2,600 trip.

Dr Motha has already delivered two babies whose mothers believe were conceived as a result of swimming with Fungie, the dolphin which lies in Dingle Bay, County Kerry. One lady, who was contemplating an operation, went to Dingle and says that she became pregnant the same week! The other became pregnant a couple of months after being there.

Dr Motha has been working with psychological aspects of infertility for nine years. She says that some people who can't conceive seem to have an internal block at a subconscious level. Dolphins are extremely good at detecting human feelings and play with her patients in such a way that releases internal tensions.

The Florida trip will be based at Key Largo, at the Environmental Research & Educational Foundation, and couples will spend at least one hour a day swimming with semi-wild dolphins. Ten couples went on the first trip but, if successful, more will follow.

It seems to me that the power of dolphins knows no bounds — at least in people's minds. Then again, who knows? It might just work.

VERSATILE VITAMIN

Vitamins and minerals are essential to the well-being of all living creatures, and coral fishes are no exception. In an aquarium, marine fishes are not able to forage continuously for food sources as they do on the reef, and this dietary deficiency can undoubtedly play a significant role in their health and survival rate.

Vitamin C is an especially important vitamin in a fish's diet and most species are extremely sensitive to any deficiency which can reduce growth

rate and cause physical deformities. In addition, Vitamin C deficiencies slow wound healing and reduce resistance to infections, as well as environmental contaminants such as ammonia, nitrite and other aquarium pollutants.

However, by far the most important role of Vitamin C is the improvement in resistance to disease. Many studies indicate a relationship between the ability of a fish to resist infections and the level of Vitamin C within its body tissue.

Vitamin C also promotes normal body growth and helps fish resist growth deformities such as bent spines. It even keeps fish gills working effectively, maintains proper metabolism of such compounds as proteins, iron and folic acid, as well as aiding in the production of anti-inflammatory compounds such as steroids.

Many processed foods sold today suffer large losses of Vitamin C during processing and in storage. Therefore, it is important to supplement the diet's supply to promote healthy fish development. It is for this very reason that I have been using, of late, a product new to the UK in the form of Reefcare Vitamin and Mineral Supplement Blocks by a company called Aquarium Pharmaceutical Inc of Chalfont in America.

The manufacturers claim that use of these Vitamin blocks will improve fish colour, appetite, vigour and aid in their resistance to disease. They also claim that healthier fish can be seen in the first month of using the blocks.

I have to say that, on the evidence so far, these claims seem to be more than justified. Apart from anything else, these blocks are simplicity itself to use. They are just dropped into the aquarium at the rate designated on the box and they slowly dissolve into the water over a period of two or three weeks. In a wet and dry trickle filter system, the blocks can be placed into the sump portion of the filter.

I shall keep you posted on the long-term performance of these vitamin blocks but, all things being equal, they appear to be a major step forward in the care of coral fishes.

ENTHRALLING SEA TREK

I dare say that most of you have seen the recent *Sea Trek* series on BBC television on Monday evenings. The series has now finished, of course, but I think that those who missed it first time round will soon get to see it when it's repeated.

In my humble opinion, this wonderful series was the best underwater television there has ever been — and that includes the enthralling stuff Hans and Lottie Haas did when I was a kid.

Every programme was enthralling in its own right, especially the coral reef programmes, but what left me breathless were the sequences showing the two divers in the programme standing in shallow water completely surrounded by Rays, the one where they snorkelled with a Humpback Whale and her calf, and where they swam with a Whale Shark. Another exciting moment in the series was when Martha Holmes and Mike de Gruy had an encounter with 100 or so Spotted Dolphins that had made their home on a sand flat in the Caribbean.

Truly wonderful television!!

RESIDENT BOTTLENOSES

In the autumn, one of our two local evening newspapers, the *Evening Mail*, did a wildlife supplement called *Save our Wildlife*. It was full of interesting stuff about all the world's endangered species, but, of course, for me, the most interesting articles were the ones of a marine nature.

There was a two-page spread on our treatment of whales — none of which told us anything new, so I won't dwell on it here; there was also an extremely interesting little piece on Bottlenose Dolphins. Apparently it is thought that there are at least two populations of Bottlenosed Dolphins which are permanent residents to our waters and Greenpeace is studying one of them in a bid to highlight the plight of dolphins everywhere.

Once, Dolphins and porpoises were abundant in UK

estuaries and coastal waters. Much-loved and admired for being gentle, graceful creatures, dolphins are a joy to witness. Their bodies are remarkably adapted to cope with the demands of the sea. They are able to dive to great depths, being famous for their sonar 'hearing' system.

Riding a boat's bow wave is also a Bottlenosed Dolphin's idea of fun. Mothers and calves tend to stay together, while young males often leave to form juvenile groups which grow up together.

However, our seas are not friendly places for dolphins to live. Disruption of their habitats, pollution and overfishing are the main dangers. The North and Irish seas are two of the most polluted in the world, with industrial and sewage outlet pipes discharging waste directly into the sea.

There is no coherent global system for the protection of dolphins and porpoises, and Greenpeace wants to see the law changed so that locations such as Cardigan Bay and the Moray Firth can be made marine protected areas.

HEAT-CONSERVING SEAT OTTERS

Sea Otters off California sleep on the surface of the sea at night, with all four feet out of the water to conserve as much of their body heat as possible. To make sure that they don't float away in their sleep, they purposely entwine themselves in the Giant Kelp that grows in the area.

They spend all of their lives in the freezing cold water, and to keep themselves warm, insulate themselves with air, trapped within a coat of incredibly fine fur.

They also eat 40% of their body weight in food every day. Food consists of crabs, clams and abalone — which the otter eats while floating on its back, breaking open the shells with rocks placed on its chest.

IF YOU HAVE ANY MARINE ITEMS WHICH YOU THINK MIGHT BE SUITABLE FOR SEAVIEW, PLEASE DROP ME A LINE VIA OUR EDITOR.

OUT AND ABOUT

B.A.F. AT 40

By Robert Kirkup

Photographs by Jon Montgomery

Wednesday 24 October 1991: as I strained my eyes to peer through the smog-like haze, I took a deep breath of the moorland air, my eyes began to sting, then water, and the kind of deep cough associated with a forty-a-day man rose from my trembling lungs.

Was that the harsh shrill of a Lapwing overhead? No, it was a Luton Box Van. From the cab came a voice: "Out the way. That's my 8' x 6' lot!"

From that moment, I was jerked back to reality; it was not a bad dream. I had driven for five hours shaking the dust from a million orange-white pointed 'turnips' growing out the dirt track known as a motorway! This was not moorland fog either — it was engine fumes billowing out from a score of vehicles under the confined cover of Bowler's Leisure Centre. People were scurrying around like ants, loading and erecting stands and tableaux. It looked like some huge car boot sale. The most hated time was upon us all, the build-up to another Festival.

For the exhibitors, it would be complete by 9 am on Friday. For the twenty societies that were competing for the B.A.F. '91 honours, judging would be complete by 7.30 pm, and made public by noon on Saturday.

The tableaux were squeezed in at the bottom of the hall, with traders having to be turned away at what was hoped to be a popular Festival.

Societies from other areas and Federations were pleased to take part in this 'Ruby B.A.F.'. All the way from the Isle of Wight came the FBAS tableau to defend the Harry Penhall Trophy which they won in 1990. Yorkshire and North-East Federations were also in support.

Fifth prize in the tableau went to Macclesfield AS, B.A.F. veterans, with a topical tableau: 'B.A.F. raises the roof at Bowlers' — a huge box containing the aquariums, with a replica on top, of the Bowlers' Leisure Centre. Through the windows,



Top, queues waiting to go into Bowler's for B.A.F.'s Ruby Anniversary Festival.

Centre, Macclesfield's fifth-placed tableau cleverly picked up the Bowler's colour scheme and theme for the weekend.

Bottom, one of the B.A.F.'s highly coveted awards — the Stan Taylor Trophy for Furnished Aquascape.

you could see a game of bowls taking place and a dozen model tableaux arranged in the spacious hall (What, no traders?).

Fourth place went to Manchester North West, with a novel sponge filter and pump, somewhat improved from its last outing at Y.A.F. Third prize went to the tableau from Scorpion AS. It was of a magnificent free-standing Chinese dragon. Second place went to Bradford AS, another oriental tableau: a splendid Japanese water garden.

The first place went to a fantastic, 'built-for-this-Festival' tableau. From the Isle of Wight AS came the old-age winging turtles — a joy to behold. Attractively painted inside and out, the front was a cut-away section of a street; on top lay the street and a burst water main; below the murk and gloom of the sewers, was running water fed from a pond pump, and moving model turtles swimming, spinning on their backs, out for a stroll with walking frame etc... a deserved winner!

More than five hundred entries were well presented and expertly displayed in the fish competition, from the Common Goldfish, to South American Tree Frogs. Specialist societies taking part included the Catfish Association, the Rainbow Fish Study Group, the International Characin Society and Viviparous — the Livebearer Information Service.

There were a multitude of furnished aquaria on display, all three society sections being won by Halifax AS, with Brian Walsh winning the aquascape class. My wife Karen and I were delighted to win the **Best Fish in Show** with our highly colourful male Swordtail *Xiphophorus multilineatus* (formerly *X. nigrensis*).

This concluded an unusual year of 'B.F.I.S.' at the Festivals; two years running for a *X. multilineatus* at B.A.F.; two years for a *Pterigoplichthys* at Sandown; two years on the run for *Limia nigrofasciata* in Scotland, and a similar situation at Y.A.F.



A lot of advertising had been done for B.A.F. and the site at Trafford Park was easy to locate and well signposted.

The 'wet fish' stalls did have a problem with cloudy water, as a holding tank on the roof had been unused for some months. This was not a problem for Eurodiscus International who, by using their CB 6600 water purifier, produced water which tasted so nice it would keep you out of the bar! This provided the perfect environment for the stars of the show, a true pair of breeding Turquoise Discus, complete with 250 one-centimetre fry — a real bargain at £750 with the assurance that these stars would be left on view to the public until 5 pm on Sunday.

Some eight thousand or more people flooded into Bowler's over the two days (with the then, high-flying local football team and two world cup rugby semi-finals, the crowded lounge TV was also packed).

The trade-stands were well stocked as usual, with everything for the hobbyist. There were also some new lines, one being the internal filters by Aquarian being shown by David Sands. There was a mound of reading material available, with the November issue of *AGP* being hot off the press and with John Young, Jon Montgomery, Joan Haynes and John Dawes being kept very busy throughout.

Extra entertainment was provided for children by 'Ferdie Dee', the clown, while for the aquarists, some excellent lectures from Dr David Pool from the Tetra stand, a double helping from David Ford of Aquarian (one lecture standing in for John Dawes who had a bad cold at the time), and a great lecture from hobbyist Brian Walsh, talking about his fish-

house and contents. He even managed to prise some officials

away from the bar, presumably checking Brian out for his forth-

coming lecture at Weston-super-Mare!



Top left, John Young, our Advertisement Manager, received a Ruby Anniversary certificate for *AGP's* longstanding support of B.A.F. from show organiser Arnold Chadwick.

Top right, first-placed in the prestigious *AGP*-sponsored Champion of Champions competition was this impressive *Theraps (Cichlasoma) bifasciatum* owned by Mr and Mrs Byrom of Scunthorpe AS.

Centre above, as we have now come to expect, J.M.C. had a colourful display of coldwater fish . . . in top-quality water.

Centre below, bearing the 'scars of battle', but apparently none the worse for them, this Snakehead had an 'exciting' trip to B.A.F. (see Bumpy ride to Bowler's for full details).

Bumpy ride to Bowler's

A behind-the-scenes look at exhibiting fish, comes from coldwater judge George Liddle, who collected a large Snakehead (*Channa melanosoma*) from Ashington in Northumberland, having offered to 'deliver it' for the Champion of Champions competition (sponsored by *AGP*).

He had almost completed the 200-mile journey when, on the high point of the M62, he heard a bang. At that time he was being overtaken by a large empty truck and, as the truck was noisy, he believed this to be the culprit.

The Snakehead was housed in its 30in (c75cm) aquarium, and was said to be a good traveller. On driving up to the Champion of Champions stand and opening the estate, they found the aquarium to be empty. The snakehead had left through the lid! A frantic search found the fish among the bits and pieces. It was immediately placed into its water, where it began to swim around straightaway (tough things, Snakeheads!). Unfortunately the fish had damaged its head, which resulted in 'dropped points' keeping it out of the places in the C of C.

First place in the C of C was won by Mr & Mrs Byrom from Scunthorpe AS with 84.9 pts; second, Mr & Mrs Cobb from Northside (84.6 pts); third, M I Rowbottom of Marple AS (83 pts).

Now we are all left with a few short months to relax, recuperate from the Festive Season and gear ourselves up for the next Festival, the Yorkshire Aquarist Festival, due on 28 March 1992; venue, Doncaster Racecourse. See you there.

News

P.T.I.A. Win Agreement on Pesticides

Following year-long negotiations with the Pesticides Safety Division of MAFF, the Pet Trade and Industry Association is pleased to announce that the Ministers have accepted the Advisory Committee on Pesticides recommendations for transitional arrangements to bring currently unapproved garden pond and aquaria pesticides for amateur use within the arrangements of the Control of Pesticides Regulations 1986.

Subject to an immediate review of safety considerations and conditions in respect of labelling and use, MAFF proposes that products for which applications are made should be given provisional approval while full supporting data are obtained and submitted. Manufacturers of currently unapproved products should already have submitted details of formulations and specimen labels to MAFF for consideration.

The product categories include algicides, herbicides, molluscicides, growth regulators and flocculating agents. A further requirement is that these products must be manufactured for amateur use only in ponds or aquaria with neither inward nor outward flows of water.

It will be necessary to submit to MAFF a letter of application detailing precisely the names and quantities of the product's active ingredients and co-formulants, accompanied by three copies of the proposed label. If necessary for commercial reasons, formulation details can be submitted directly by the suppliers of the ingredients.

Product details submitted will be presented to the Advisory Committee on Pesticides for consideration and advice to Ministers. Products considered suitable will be accepted, charged a fee to be agreed, and given provisional approval subject to any immediate label changes. The approval will then be published in the Pesticides Register.

Those products which have already received approval will be published in the Pesticides Register for information purposes.

PTIA is currently negotiating an application deadline.

Only those products for which details are submitted to MAFF before the deadline will be considered for this exceptional approval arrangement.

The names of all products for which an application is made (and those already COPR approved) will be listed in the Pesticides Register.

Any product not appearing on the list will be deemed by MAFF to be unapproved and appropriate enforcement action will be taken to ensure that no further advertisement, sale, supply, storage and use takes place.

Failure to comply with the regulations may lead to prosecution.

ACP has published a priority list of existing active ingredients under review (Pesticides Register Issue No. 9, 1990). Applications containing these substances will be accepted, but continuing approval will be subject to the outcome of the review. Applications for substances considered to be unacceptable for safety reasons will be rejected and manufacturers will be required to cease marketing the product. ACP will advise on acceptable timescales for safe use and disposal of stocks already on the market.

In the absence of data to support an application for continuing use of malachite green and dimethyl urea, these compounds are unlikely to be given approval. Applicants whose products contain these ingredients are advised that they will be required to submit, before the agreed deadline, data for evaluation in support of their continuing use.

All information and data must be submitted to **Mr. P Munday, Room 325a, Ministry of Agriculture, Fisheries and Food, Ergon House, c/o Nobel House, 17 Smith Square, London, SW1P 3JR.**

Copies of the Data Requirements Book can be obtained from **The Information Sec-**

tion, Data Evaluation Unit, Pesticides Safety Division, MAFF, Rothamsted, Harpenden, Herts AL5 2SS. Tel: 0582 452100.

PTIA members can obtain further advice by contacting the Secretary, **Barry Huckle, at 103 High Street, Bedford, MK40 1NE. Tel: 0234 273933; Fax: 0234 273550.**

New Award Acknowledges Individual Endeavour

A new award created by pet and aquatic product manufacturer Interpet to acknowledge outstanding contributions made by individuals towards the fish-keeping hobby, has been presented by the company to **Dr David Ford**, senior consultant to Aquarian, and **Joe Nethersell**, chairman of the Federation of British Aquatic Societies.



Dr Neville Carrington, centre, chairman and group managing director of Interpet, presents the first Interpet award to **Dr David Ford**, left, and **Joe Nethersell**. The trophy was introduced at this year's Supreme Festival of Fishkeeping to acknowledge outstanding contributions by individuals, towards the fish-keeping hobby.

David and Joe were both presented with their awards during a dinner at the Supreme Weekend of Fishkeeping, held at Sand Bay in November '91.

Mike Clarke, special projects manager for Interpet, commented: "David Ford has been a

stalwart of the industry for several years, and has been responsible for a great deal of the progress which has helped to make fishkeeping a more pleasurable and rewarding pastime."

Of **Joe Nethersell**, Mike praised his unending efforts on behalf of the FBAS: "Joe is always around when there is work to be done and, with an organisation as large and extensive as the FBAS, there is never any shortage of work. His efforts, in support of the hobby and the hobbyist, have been unstinting."

Nominations are now being invited for next year's **Interpet Award**, open to any individual in the trade or the hobby who has made a significant contribution to advance the fish-keeping hobby as a whole. Nominations should be addressed to **Mike Clarke** at Interpet.

Over 1500 people visited this year's Supreme Weekend, which was held at Pontin's Sand Bay Chalet Hotel, near Weston-super-Mare in November, and was organised by the FBAS with the cooperation of Interpet.

"The event was very well received by the trade and public alike," remarked **Mike Clarke**. "A very important aspect of the show is the support given to retailers, a formula which, once again, proved extremely successful."

King British acquires UNO

On Friday 29 November 1991, the business and assets of **C. Ellison & Co. Ltd.**, were acquired by **King British**, a member of **William Sinclair Holdings plc**.

As from Monday 2 December 1991, **Paul Barraclough** took over responsibility for all operations within the UNO range of products.

UNO will become a division of **King British**, who are pleased to increase their product range into the aquarium heating market as a result of the acquisition.

All goods delivered on or before 29 November 1991 should be invoiced to **C. Ellison**

& Co. Ltd., Arnold Street, Nantwich.

As from Monday 2 December 1991, all goods should still be delivered to Arnold Street, Nantwich, but invoiced to King British Aquarium Accessories Co. Ltd., Haycliffe Lane, Bradford BD5 9ET, W. Yorks.

Ideal Aquatic Stand

"No Ideal Home should be without one!" That is the key phrase for the 1992 Ideal Home Exhibition to be held at Earl's Court. In association with 'Aquarian' and Underworld Products, Kingfisheries Limited of Beckenham will, yet again, have a stand at the Exhibition and so be at the forefront of introducing over 600,000 potential fishkeepers to the exciting hobby we all enjoy.

The show will be open from Thursday 12 March to Sunday 5 April from 10.00 am till 8.00 pm, except Thursdays when it will stay open until 10.00 pm.

One of the unique features of this year's Ideal Home Exhibition is that, during each

weekend, there will be a speciality display taking over half the area of the new Earl's Court No 2 Hall. In response to this, guest celebrities from the fishkeeping world will be on the stand at weekends to promote the hobby and to answer any fish-related questions.

In addition, anyone wishing to meet Stan Kemp of Kingfisheries, who is responsible for the Kingfisheries video series, can call in at any time during the show as he will be present throughout the whole four weeks to answer questions on any aspect of fishkeeping.

Watch this space next month for details of guests to appear on the stand.

New Premises for Ichthys

Ichthys, importers, breeders and distributors of ornamental fish, are opening new quarantine and wholesale premises.

In addition to the usual 'bread-and-butter' types, Dr Jess Eastwood plans to continue importing 'unusual' fish — including out-of-the-ordinary

catfish, and special coldwater 'fancies'. All fish will be fully quarantined prior to sale and Ichthys "will be working strictly within regulations and guidelines laid down by the EC, MAFF and CITES".

For further details contact Dr Jess Eastwood, Ichthys, 1 Cary Edge Lane, Welham, Castle Cary, Somerset BA7 7LZ. Tel: 0963 50583; Fax: 0963 51860.

'Alien' Goldfish Threat

The National Rivers Authority was recently called in to clear an elite national nature reserve pond of goldfish that were threatening the local wildlife, including an important collection of dragonflies.

'Alien' goldfish had been misguidedly placed in Venner's Pond on the Braunton Burrows National Nature Reserve in North Devon, so John Breeds, English Nature's Site Manager, asked the NRA to remove the goldfish to protect the dragonflies, newts, toads and frogs that live in the water.

"The pond holds 14 species

of dragonflies, including some uncommon ones. The danger is that the goldfish would eat the dragonflies at their larval stage and also consume the spawn of the newts, toads and frogs next spring.

"Whoever introduced the goldfish may have thought they were helping the environment, but in fact, it was very irresponsible and damaging. I am delighted the NRA can help", reported John Breeds.

The NRA undertook the removal exercise on Tuesday 8 October. Wardens 'electro-fished' the pond and transferred the 28 large goldfish to an appropriate home.

"As an organisation committed to enhancing conservation of the water environment, the NRA is very pleased to assist with the removal of the goldfish.

"It is essential that people do not place non-native species into bodies of water, since it adversely affects wildlife and can spread disease", commented NRA South West Conservation Officer Peter Nicholson.

A date for
your diary...

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1992

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TRADE ONLY

Koi Calendar

By David Twigg

A Happy New Year to you all. With Christmas over, many people start thinking about their summer holidays; Koi keepers, however, are generally looking to the show season calendar. May I, therefore, take this opportunity to remind the BKKS sections and other independent Koi societies that if you haven't passed on details of your show to me yet, you do so at your earliest opportunity? This column is written at least six weeks before the publication date, and this means that if your show is at the end of the 'cover month', I must know at least 10 weeks before in order to give it a mention.

I will continue to preview and review shows this year and hope that my work schedule will permit me to get to more of them than I managed during the last year. My thanks to those who made my wife and me so welcome at those shows we did manage to attend.

JOBS (THOUGHTS) FOR THE MONTH

The 'perfect' pool is a reality! We really must be coming very close to it. With the dramatic advances in knowledge in recent years and a wealth of new ideas, proven or otherwise by trial and error, to call upon, can we fail?

For years now people have been extending and improving their existing ponds. Some have even taken the plunge and started again from scratch. It surely is possible to collate all these ideas into one super pond. It might involve a very high initial cost to build this way, but it will surely end up cheaper in the long run because you are not destroying parts to improve them. By incorporating many simple ideas, the minimum maintenance pond is with us.

Some thoughts for you to consider: a filter by-pass, a split filter system (to enable easier maintenance without disturbing water quality), a built-in flush-fitting skimmer, no corners, bowl-shaped bottom, central dividing section, a watercourse for vegetable filtration, etc, etc.

I hope that's enough to keep

you discussing with your spouse for a while during the long January nights.

Other 'January' thoughts

Another talking point raised recently is that of the use of UV sterilisers during the winter months. Many people consider them useful only for their ability to kill 'green water' and therefore turn them off during the winter months when, owing to the reduced water temperature and daylight hours, the algae die back.

Perhaps the original use of these sterilisers comes to the fore at this time. The free-floating bacterial 'kill' they provide at a time when Koi are at their most susceptible to attack from such a source, may be a distinct advantage. It is impossible to obtain a sterile pond, but such action may keep the bacterial count to a minimum, thus ensuring an easier awakening to spring for our fish.

WHAT'S ON IN JANUARY

Meeting, etc

- 6 - Kennet Valley Section BKKS. Monthly meeting. Contact Bob Thompson on 0734 713640.
- 8 - South Hants Section BKKS. Monthly meeting at the Denmead Church Hall, Hambledon Road, Denmead, Hants, commencing 8 pm. Contact Tony Price on 0705 261085.
- 8 - Merseyside Section, BKKS. Monthly meeting at the Hare and Hounds, Maghull. All interested in joining or requiring further information contact Phil Adamson on 051 220 2970 or Tom Hickman on 051 426 3673.
- 9 - East Pennine Section BKKS. Monthly meeting in the Fitzwilliam Suite, The Rockingham Arms, Wentworth, South Yorkshire. Contact Dennis Godfrey on 0532 795134.
- 12 - Northern Section BKKS. Monthly meeting at St James Hall, Pendleton.



- For details of what's on please contact Tony McCann on 061 794 1958.
- 12 - Mid-Somerset Section BKKS. This month's meeting is based upon videos, both technical and pond visits. West Monkton Village Hall, Near Taunton. Contact Alan Purnell on 0458 72132.
 - 15 - Mid-Staffs Section BKKS. Monthly meeting at RNA Club, Elmore Green Road, Bloxwich, at 8 pm. Contact Joan Rutter on 0543 876699.
 - 15 - Crouch Valley Section BKKS. Monthly meeting at Laidon, Basildon. AGM. Contact Allan Ward on 0268 543600.
 - 15 - Yorkshire Koi Society. Monthly meeting at the Penguin Hotel, Wetherby (200 yards off A1), commencing 2.30 pm. For further details ring Mrs Rita Thompson on 0484 851433(B) or 0484 850422(H).

RECENT TRIPS

Another of our day trips took Lyn and me to PWL Fish Industries Ltd and Quality Koi Co Ltd. I have visited John and Glenda Cowell and their team at Quality Koi on many occasions before, but had only heard and read of the more recently established PWL.

Having left the M6 and headed through the Cheshire countryside, we eventually arrived at PWL and were immediately impressed with the size of the recently constructed 'polycarbonatehouse' which covers over 200,000 gallons (c 909,000 litres) of water.

Dennis Mitchell kindly described the pool and filtration details to us and introduced us to some of the largest and most beautiful Koi we had

ever seen. Most people will have seen the PWL adverts that show the three large pools with some smaller pools in the foreground. Well, the actual size of these pools cannot be appreciated until seen. Each of the large pools holds about 50,000 gallons (c 277,000 litres) and I am glad I am not the person who has to wield the net when catching fish for a customer!

A large number of smaller Koi of different grades are held in the five small pools to whet the appetite of the visiting Koi keeper. A wide range of Koi-related dry goods are also sold.

If you haven't yet been, PWL is well worth a visit next time you are in their area. PWL can be contacted on 0925 73350.

We next ventured across country to the former church in Brighouse which houses Quality Koi. As mentioned earlier, I have visited many times before, and each time find John involved in some form of expansion. This time, he had started work on the gallery, which he tells me will house a large tropical fish collection. Another floor is to be suspended across the building, giving even more room for expansion.

Two large pools are the centre-piece and hold the larger, quality fish. These are surrounded by a series of smaller pools swarming with the smaller, and cheaper, Koi. A careful look through these fish reveals some really good prospects.

Down in the basement John kindly bowled some of his Tategoi for me to photograph even though he was preparing vats to receive a shipment of fish that evening.

Quality Koi stocks a very wide range of filter systems and other dry goods. A comprehensive 30-page catalogue is produced and they specialise in the Mail Order. Contact Quality Koi Co on 0484 722015.