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AQUARIST

AND PONDKEEPER

The Magazine for Fishkeepers

AQUARIUM FISH PHOTOGRAPHY
(COLOUR FEATURE)
Special Xmas Competition
for young fishkeepers
Sponsored by Tetra
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COVER STORY Photo: A. van den Nieuwenhuizen

Peivicachromis pulcher is commonly known as the Krib, or Kribensis, a relic from the days when the scientific name for this species was *Pelmatochromis kribensis*. The Krib is a member of the Cichlidae, which are distinguished from other families by the possession of a single nostril on each side of the head (instead of two) and a lateral line which is split into an anterior (longer) section situated high on the body and a shorter, lower, posterior portion.

P. pulcher is a West African fish found in soft, slightly acid water. It is a relatively peaceful species other than at breeding time when it can become strongly territorial. There are numerous colour varieties, the one shown in our picture being the one most frequently encountered in UK. Both sexes are very colourful, with the male having the longer, slimmer body and flowing fins.

Kribs are egg-stickers and may spawn in aquaria inside a cave (such as a flowerpot). At this time, the female usually takes on the dominant role but, as our photograph shows, may share parental duties with her mate. Interestingly, the sex of the fry seems to be affected by the pH of the water, higher readings favouring females.

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WHAT IS YOUR OPINION?



by B. Whiteside,

B.A., A.C.P.

'Photographs by the Author'

CHRISTMAS GREETINGS to all my readers. I hope you will have a happy and enjoyable Christmas. My thanks go especially to those who took the time and trouble to write to me during 1983. I have received relatively few letters since the beginning of the superb summer—followed by the dulllest September for many decades. I hope you'll send me a few lines soon. The February 1984 issue will mark my 20th year as a regular contributor to *The Aquarist & Pondkeeper*. I have survived through a number of changes during that period. Has anyone else reading this been a regular reader for the past 20 years? If so, I should be pleased to hear from you. What are your favourite items in the magazine now? Are there any regular features that you would like to see changed or omitted? What additional new items would you like to see included?

From 50 Yew Tree Avenue, Roman Park, Lichfield, Staffs., came the following letter written by Mr. Charlie Field. "In the September issue you asked readers to let you know about their experiences in keeping common goldfish, and firemouth cichlids—*Cichlasoma meeki*. I started keeping fish only a year ago, beginning with a 24 in. tank given to me by a friend. In it I decided to keep goldfish; so I got myself one common goldfish,

two fantails and two moors. All was fine for the first six months, then the common goldfish started to bully the other fish. In an attempt to stop him from the bullying I decided to place him in a glass bowl floating in the tank. This punishment seemed to work at first and he wouldn't start his bullying for quite a while after. However, after a couple of sessions in the bowl it seems to have no effect and he would start bullying as soon as he was released back into the main tank. I decided that I would have to isolate him from the others for good before he did them some damage—or worse. So I purchased one of those small plastic bowls and placed him in that. He does not seem to be too happy about his restricted space but the other goldfish seem a lot happier since the transfer.

"While on the subject of goldfish it seems to me that they are more susceptible to disease than tropical fish. My goldfish have suffered from fungus, white spot and velvet disease. To cure such outbreaks I first tried the mass-produced products already on the market—but to no avail. I have found the best remedy for common diseases in fish to be a solution of salt water. This has worked better on my goldfish than any of the specialised cures.

"Last Christmas I was given a complete 36 in. tank and outfit. I decided to keep tropical fish in this new tank. I stocked it with some bronze and peppered catfish, a shoal of tiger barbs, a pair of kribensis, a

male and two female swordtails, six guppies and a female firemouth. The firemouth took an immediate liking to the male kribensis and now follows him all around the tank. Although basically shy and spending most of her time in the foliage, whenever the female krib gets near to the male the firemouth darts out and chases her away. (Photo 1 shows a firemouth). I have found that feeding can be a bit of a problem when using tablet or freeze-dried *Tubifex*: the firemouth will gulp down the whole tablet or block in one go, leaving herself bloated for some time. Now when I use tablets I drop them into small crevices in the rocks where the firemouth cannot get to them, but the smaller fish, such as the cats, can. With the freeze-dried *Tubifex* I break the blocks into smaller pieces in order to give all the fish an equal chance to get some of the food.

"About four months ago I noticed that one of the female swordtails was somewhat bloated. Upon closer inspection I noticed that she was in fact pregnant, so I went out and bought an 18 in. tank with a box filter. After about six weeks in this new tank she started to give birth—a fascinating thing to watch.

"Unfortunately the new-born fry were not quick enough swimmers to get away from their mother and I lost about ten before I managed to get the mother into a breeding hatch where her movement was confined to a minimum and the fry were able to drop through to the safety of the main



Firemouth cichlid—*Cichlasoma meeki*



Oscar—*Astronotus ocellatus*

tank. I started to feed the fry on Liquifry after two days and kept them on that for two weeks. Then I changed to feeding them on powdered dry food, on which they remained for a further four weeks. After that I put them onto growth food, with the occasional feed of freeze-dried *Tubifex*.

"They have been on this diet for about a month now and I intend to keep them on this for a further two months before gradually changing to ordinary flaked food for tropicals. Out of a shoal of 35 fry I have lost only about eight—which according to an experienced aquarist friend of mine is pretty good going as he expects to lose about 50% of those born. This seems to be a rather high number to me; surely a figure of about 25% is more likely. After the swordtail fry are fully grown I am going to try to breed either tiger barbs or kribensis. I'd prefer the kribensis because I am more fascinated by cichlids than by any other family of fish."

I was interested to receive a copy of the September 1983 edition of the *Midland Koi Association's News*. It contains an interesting selection of news and information. By the way, I have not kept koi and have few photographs of them in my files (for files read polythene carrier

bags!). Would any koi keepers—preferably resident in Northern Ireland, or London—care to invite me to photograph some of their koi? I have photographed my East End friend Ron Baldry's koi a few times but it is difficult to photograph koi in a small, outdoor pond: one tends to get a lot of reflections of clouds, etc. in the pond water.

Mrs. M. French lives at 180 Coldharbour Lane, Hayes, Middlesex, and writes: "Last July, 1983, I bought myself three young firemouths to add to my 36 in. tank of cichlids. I bought the trio hoping I would get a pair. Unfortunately I lost one of the firemouths—and nearly all of my other cichlids. The other fish were really doing well fed on garden worms and dried *Tubifex*, plus Aquarian flake food; then in July of this year I noticed a lot of activity going on in my tank: the firemouths were digging a pit under a piece of slate. After two days of that I noticed that the smaller of the two was trying to entice the larger one behind the slate. After a lot of gill-puffing and jaw-locking the pair went behind the slate and spawning began.

"Within three days the fry were picked off the slate by the male, who had stayed behind the slate fanning the eggs and guarding them, while the female had kept guard outside the

slate keeping the other fish at bay. In a few days' time the fry were free-swimming, with both male and female protecting them. Unfortunately the firemouths ate the young after eight days. The fish then spawned again. When the fry were free-swimming I removed them to a breeding tank. Since then my firemouths have spawned four more times and by removing the fry I now have around 300 young which I will be ready to sell within a couple of months; so if any aquarists are interested in buying young firemouths at rather low prices, and I am lucky enough to have my letter printed, they can write to my address and I will tell them the price when the young are ready to go." (I should advise readers to enclose a s.a.e. when writing to Mrs. French—at her home address.)

Incidentally, many readers must breed fish and have large numbers of particular species for sale at reasonable prices. If you have any young fish for sale, drop me a line giving details of species, size, age and price, as well as your name, address and telephone number, and I'll try to include details in a future feature.

A Woolworth's clear, 40-watt bulb has just scored 210 days. That's not at all bad.

The next letter presented me with a problem: it did not give the writer's full address. Despite that, I've decided to print it anyway. It was written by Mr. M. J. White, of Northampton. He wrote: "First, may I say how much I enjoy your article, especially since the points made have usually come from practical experience. I am writing to you in response to comments made about Oscars being difficult fish to keep—an opinion I have often heard expressed. I have kept Oscars at three separate times during the past ten years and have never encountered any difficulty whatsoever, especially with regard to feeding. In my experience Oscars eat anything and everything—including the under-gravel filters, heaters/stats, and aquarists' fingers. They have a gargantuan appetite and a rapid



Cichlasoma severum—banded cichlid

rate of growth. The Oscar I have at present is about 5 in. in length and shares a 33 gallon tank with a 6 in. *Plecotomus* and a 4 in. talking catfish. Filtration is by internal power filter and lighting is 50 watts for 12 hours daily. The water has a pH of 7.8 and the DH is 19°. I feed mainly on large flake food supplemented generously with earthworms: the short, red type are best. The best tip I can give anyone wanting to keep Oscars is: allow plenty of space and plenty of food."

Photograph 2 shows an Oscar—*Astronotus ocellatus*. Please drop me a line if you have any information to impart about the keeping of Oscars—preferably information gained from practical experience and not from books. The fish in the photograph—indeed all the fish in this month's photographs—belongs to 16-years-old Robert Robinson. My thanks to Robert, a former pupil, for allowing me to photograph his fish.

Photograph 3 shows a banded cichlid, *Cichlasoma severum*, and Photograph 4 a *Mystus* catfish species. Please write to me if you have kept either species.

I've received very few readers' letters of late—so if you do write

artificial one—because my median nerve was severed and re-joined. Please take care if you are working with glass: a split second's slip can alter one's whole life.

The two plants of African fern, as I call it, *Bolbitis hendeloni* as it is called in the books, that I purchased some considerable time ago are still growing very slowly. I removed a tiny piece from one plant and placed it in a second tank—where it is making very slow progress. Those who prefer quicker-



Mystus catfish species

there is probably a good chance that your letter will be published, if it is interesting enough.

Like the Ancient Mariner, I feel compelled to tell my tale. On Christmas Eve 14 years ago I managed to cut my left wrist very badly while trying to re-glaze an aquarium. Since then I have typed all my articles using only the index finger of my right hand and the small finger of my left hand. Although my hand works reasonably well, it feels rather like an

growing ferns should try Indian fern (very fast) and Java fern (considerably slower).

For a future feature please send me your opinions on any of the following: (a) spatterdocks; (b) garden ponds in winter; (c) aquarium lighting and good plant growth; (d) the best type of aquarium filters; (e) breeding large egg-layers; (f) breeding mouth-brooders; (g) propagating aquarium plants; and (h) cultivating live foods. Goodbye until next year.

AQUARIST SCENE IN SPAIN

by Dr. David Ford

SPAIN does have a few aquarists. Exactly how many is unknown because no survey has ever been carried out, but every town has at least one pet-shop with a few tanks, and the big department stores such as El Corte Inglés have a dozen tanks of assorted tropicals.

There are no clubs or shows such as we have in the U.K. but there is a monthly magazine for the hobbyist. It is called 'Aquarama—Revista de acuariofilia' at 200 pesetas (just over £1), an attractive all-colour magazine now in its 3rd year of publication. It would probably be uneconomic to publish the magazine just for Spain, but 300 million people speak Spanish! This is because Spanish is the main language in South America giving a large market for Spanish-language publications.

The public aquariums are few in number. So far, I have discovered only four, a small one in Madrid, a large one in Palma Mallorca and Barcelona actually has two.

Our family home was in Galicia in the Northwest of Spain. It is a rainy place peopled by the friendly Gallegos, who live on a diet of locally grown wine and shellfish from the many Rias of the rocky coastline. The area is full of aquariums! Every bar, hotel and restaurant has a large tank of seawater,

complete with aerators and power filters—but not to house pet fish. They are used to keep fresh the lobsters, crabs, shrimps, octopus, squid and all the other gastronomic delights of the region.

For all you holiday-makers visiting the sunnier parts of Spain, the following public aquariums are worth a visit:

The Aquarium of Madrid (Acuarium de Madrid) is in the street behind Galerías Preciados and near the back entrance of El Corte Inglés, two super-stores near the Gran Via and Plaza del Callao. Around these stores is a series of pedestrian-only streets peopled by magicians, comics and musicians play-

ing everything from Spanish guitar to saxophone. One is called C/ (short for Calle or Street) Maestro Vitoria and the Aquarium is No. 8. The area is central Madrid, postal number 13, and can be reached by taxi (around 300 pesetas from outlying areas) or the good old yellow bus (autobus amarillo) number M10 is best (at around 30 pesetas any distance).

The aquarium is open from 12 a.m. to 2 p.m. everyday, and from 5.30 p.m. to 8.30 p.m. in the evenings. Saturday is 5 p.m. to 9 p.m. The entrance fee is 150 pesetas for which you receive a paper lapel badge with a nice picture of a tank of Angels. There are special feeding times: on Mondays at 7 p.m. the Pitones (Pythons), on Tuesdays at 6.30 p.m. the Pirafies (Piranhas), on Wednesdays at 7 p.m. the Cobras (same word as English), on Thursdays at 7 p.m. the Morenas (Moray Eels) and on Fridays at 7.45 p.m. the Lucios (Pike).

The aquarium is actually a converted shop, that still sells various pet accessories as well as tropical fish. At the back of the shop are two flights of stairs leading down to two floors of exhibits. The first is freshwater and marine fish with about 15 tanks 3 ft. x 3 ft. x 3 ft. The next floor is a Terrarium with about 30 different specimens of snakes. Apart from an excellent shoal of Piranhas the fish exhibited and the

Some large Piranhas in Mallorca Aquarium





Pseudoplatysoma fasciatum, one of many specimens comprising a fine collection of Catfish

aquarium decor are not top quality. The whole place gives one the impression of having seen better days. Perhaps an influx of British touring aquarists will help!

An excellent public aquarium exists on the Island of Palma Mallorca (Majorca). It is across the Island from the popular Las Palmas at a small, quieter holiday town called Porto Cristo (under an hour's drive from the airport). It is a large building, gaily decorated and easily located via the many road signs (Acuario). It is situated in front of the famous caves of Drach (Cuevas del Drach). The entrance fee is 175 pesetas (85 for children). There are no official opening times since someone is always there.

The aquarium has two levels, each with wide corridors of tanks set within marble walls. Each tank is large (some 8 ft. x 3 ft.) with undergravel filtration giving a constant echoing, bubbling noise. Over 50 of these tanks house interesting specimens of freshwater and marine fish.

Each specimen is listed on display cards with the common name in Spanish, English, French and German plus the Latin name. It is interesting to read the differences, and similarities, of these common names, in the four languages.

Plastic plants and logs are used throughout for the limited decoration of the aquariums. No tank is crowded with fish, probably to reduce maintenance work. The exhibition includes some Black Piranhas 12 inches long

and some very large Catfish (*Pime-lodella*) nearly 2 feet long.

Downstairs to the second floor of exhibits, the first section is a huge tank with 4 ft. x 2 ft. portholes, and the aquarium is filled with Mediterranean fish. The next section contains Tropical Marines, including old favourites such as Powder Blues (*Acanthurus leucosternon*) and Lionfish (*Pterois volitans*). There are no invertebrates except a few of the local lobsters.

The exit is via a souvenir shop selling the usual sweets and plastic baubles, but they also sell excellent mounted examples of preserved marine species such as crabs and corals. Their pot ashtrays painted 'Acuario de Mallorca' are also very cheap . . .

Barcelona has a very strange public aquarium (Acuario Publico). It is part of C.S.I.C. (Instituto Investigaciones Pesqueras—Fisheries Research Institute) on Paseo Nacional at the end of Barcelona's holiday beach. It is the most 'gloomy' aquarium I have ever visited. Four corridors radiate from a central green-glass dome, giving an eerie grey-green light. The tanks are huge and mostly empty—as the only visitor, my echoing footsteps made me feel I was in a ghost aquarium! It is open from 10 a.m. to 2 p.m. and 4 p.m. to 6 p.m. (but 7 p.m. on holidays), children free but adults pay a nominal few pesetas. The 44 tanks house only local species—no pet fish—but since these are so different to our usual specimens it makes a visit worthwhile. Examples are the huge (2 ft. long) Lubina llabarro (*Dicentrarchus* sp.), the long and always active eel *Muraena helena*, the fin-walking Serrano (*Paracentropistis cabrilla*), the silvery

Pintarroja gat (*Scyllium canicula*) and the sad-faced Araña (*Trachinus araneus*). A few specimens of crabs and lobsters include the Langosta rosada (*Palinurus mauritanicus*) with its unbelievably long feelers. The place to go in Barcelona is the Zoo (pronounced 'thoh' in Spanish). It is in the large central park, Parque de la Ciudela (area DP3 on the standard tourist map 'Plano Guia de Barcelona' from any news-agent). To enter the Zoo you pay 140 pesetas 10 a.m. to 5.30 p.m., but an



The busy entrance shop, Aquarium of Madrid

extra 120 pesetas for the Dolphin Show (at 11.30 a.m., 1 p.m. and 4 p.m.—no show Fridays). The aquarium is within the Zoo, part of the dolphinarium in a complex called the Aquarama. Entrance to the aquarium is free.

The dolphinarium uses natural seawater linked to a central tank acting as a 2 million litre reservoir. Four large filters and two pumps circulate the seawater at 300,000 litres/hour. The corridors of aquarium exhibits circle this central tank and there are aquarium

The first floor of the exhibits in the basement of the Aquarium of Madrid





Entrance to the Acuario de Mallorca, the Mallorca Aquarium

shaped port-holes for viewing below the tank's water level.

The aquarium has 97 varieties of fish on show on the three floors. The central entrance floor is saltwater fish in 46 individual tanks. Down one floor is a freshwater section also with 46 tanks. There is also a terrace exhibition on the third floor where a theatre circles the central tank for water shows (closed in the winter months).

Their numerous species of fish include all the popular varieties and one feature I find fascinating is the Spanish names of these pet fish. For example, the Glass Catfish (*Kryptopterus bicirrhus*) becomes the 'fish cat of glass' (Pez gato de cristal). A Veil-tailed Reticulated Guppy (*Poecilia reticulata*) becomes 'Guppy skin of snake tail of veil' (Gupí piel de serpiente cola de velo). The Siamese Fighter (*Betta splendens*) is 'Fighting Siamese' (Combatiente siamés). A Discus Fish is 'Fish Discus' (Pez disco) and the ordinary Silver Angel is 'Fish Angel silver common' (Pez ángel plateado común). All can be found in Barcelona's Zoo Aquarium.

The aquarium hobbyist is just like



Inside the Mallorca Aquarium showing excellent layout of the large aquariums

his counterpart in Great Britain. The equipment, fish varieties, plants, food and remedies are exactly the same as you can find in any British home—except that the labels are in Spanish of course. Most of the country is too hot and dry to allow outdoor ponds so large Goldfish and Koi are very rare. One notable exception is the beautiful city of Granada. Although mostly sunny and hot, water is plentiful from the melting snows of the Sierra Nevada. Within Granada is the ancient Moorish city of Alhambra with its spectacular



Behind the scenes, Mallorca Aquarium, where pressure filters clean the water in the Show Aquaria

gardens, fountains and ponds. Huge and colourful Goldfish will be found in its crystal clear waters.

When we left Spain I asked our Spanish Aquarist friends what message they would like to send to the U.K. and they replied:

"Saludos desde España y larga y saludable vida para sus peces" which means, greetings from Spain and a long, healthy life to your fishes.

Your questions answered...

Having problems? Send your queries to our panel of experts who will be pleased to be of service. Every query receives a personal answer and, in addition, we will publish a selection of the most interesting questions and responses each month. Please indicate clearly on the top left hand corner of your envelope which department you wish your query to go to. All letters must be accompanied by a S.A.E. and addressed to:

**Your Questions Answered, The Aquarist & Pondkeeper,
The Butts, Brentford, Middlesex TW8 8BN.**

TROPICAL



Dr. C. Andrews

Tropical



'worms' ...

I seem to have a large number of 'worms' in the gravel and on the glass of my tank. What are they and how can I get rid of them?

Your pests sound rather like free-living flatworms (planarians) and/or bristleworms.

These are often introduced into aquaria with live food and they then thrive in unhygienic, dirty conditions! Uneaten food and accumulated organic matter are a great encouragement to such pests. Rather like snails, these pests are unsightly rather than harmful, although they may attack fish eggs and fry.



A Triclad flatworm

Control measures include: eliminate overfeeding, increase partial water changes, remove any accumulated debris, ensure regular filter maintenance; or introduce fish such as gouramis, siamese fighting fish or kribensis to feed on these pests (particularly flatworms); or remove all fish and raise tank temperature to 35°C for several hours. This will kill flatworms, although a partial water change and a

reduction in temperature will be necessary before the fish can be introduced.

If all else fails it may be necessary to completely strip the tank down, rinse all the rocks, gravel and decorations in dilute bleach or formalin (followed by a good rinse in clean water) and dip all the plants in a cherry-red solution of potassium permanganate for a few minutes.

nitrite ...

Can you give me some information on nitrite in the aquarium and the levels which are toxic to fish?

Within an aquarium a process known as the nitrogen cycle converts ammonia and similar waste products through nitrite to nitrate, the latter of which is used as a food by the plants. Helpful bacteria, which are harmless to fish, present in the gravel and filter are responsible for this process, and these bacteria are dependent upon a continuous and plentiful supply of oxygen for their survival. Ammonia and nitrite are both potentially very toxic to aquatic organisms, much more so than nitrate. Therefore, every week or so, just before a partial water change, the nitrite content of the aquarium water should be tested using a test kit. A concentration of 0.1 mg nitrite nitrogen ($\text{NO}_2\text{-N}$) per litre (or less) is harmless to most fish.

Whilst some fish (eg. certain characins) are more resistant to nitrite than others (eg. guppies, swordtails), a level of 0.2-0.2 mg nitrite nitrogen per litre

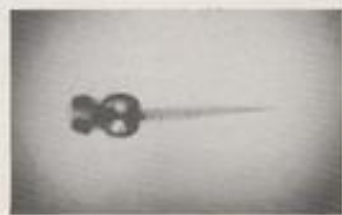
can be quite harmful to most aquarium fish. The fish may appear off-colour, with clamped fins and reduced appetite and more susceptible to certain diseases.

Nitrite levels of this amount suggest that waste products within the aquarium are not being broken down fast enough. At 0.1 mg nitrite nitrogen per litre, at least 50% water change should be carried out, although regular nitrite tests will prevent this situation arising. Increased nitrite levels are caused by infrequent partial water changes, inadequate filter maintenance, accumulated organic debris, overcrowding and overfeeding. The above comments concerning nitrite also apply to marine aquaria, although marine fish and invertebrates are even more sensitive to this pollutant.

infusoria ...

How do I culture infusorians for my gourami fry?

Infusorians are tiny single-celled animals which may be cultured in large sweet jars. To ensure a continuous supply, a culture needs to be started every 3-4 days, until the fry can take brine-shrimp or finely powdered dried foods.



Gourami fry, such as this three-day-old *Colisa lalia* thrive on infusoria

COLDWATER

Arthur Boarder

PLANTS

Vivian De Thabrew

KOI

Hilda Allen

MARINE

Richard Sankey

DISCUS

Eberhard Schulze

Fill a jar three-quarters full with dechlorinated tap water and add 3 or 4 bruised lettuce leaves or a whole banana skin or even a little hay which has had boiling water poured over it (to break up the cells). Put the jar in a warm, moderately well lit place—with the lid off. Over the ensuing few days the culture should go cloudy (and begin to smell slightly!) and then clear as the infusorians develop. Once the culture is clear and 'sweet smelling', it may be poured into the fry tank—a little at a time. Infusorians are an excellent first food for really small fish fry. **C.A.**

feeding orfe . . .

I am finding it difficult to find enough garden worms for my golden Orfe so I have been giving them cat and dog food. I have been told that this could be harmful to them. What do you think?

Golden Orfe will eat almost any food you can find for them. You can give them strips of meat and ox heart, dried brown bread, rolled oats, boiled wheat, boiled rice, trout pellets and blue bottles.

colour change . . .

How long does it take pond-bred goldfish to change colour to gold? I have some which are two and a half years old and they are still carp coloured. What controls the colour change?



Similarly aged but differently coloured goldfish

The colour change is affected by more than one condition. Warmth plays a large part when the fishes are young. If fry are reared for the first three months or so with some warmth, say 70°-75°F, they can change colour within the first year of hatching. Even if warmth is only given for six weeks and there is a good summer, the fishes can change quickly, but a

lot depends on how early in the year they were hatched. Then there is the question of growth and this depends on warmth and feeding. However, one of the main factors is from which strain the fishes were bred. If fishes are allowed to breed without control in a garden pond, it is probable that after a few years several late changing fishes will appear. If they are allowed to remain in the pond they will breed and more fishes will appear which do not turn gold for some years. I would never think of using any fantail for breeding purposes if it had not changed colour within the first year of hatching. Indiscriminate breeding in a pond is almost certain to mean that more unchanged fishes will appear every season. **A.B.**

Coldwater**fungus . . .**

What causes Fungus disease on fishes and how can it be cured?

The disease is caused by a type of mould. *Saprolegnia* which is present in most open waters. As long as a fish is in a healthy condition and has no wounds it is usually not attacked by the disease. The fish have a protective mucus covering and as long as this is intact the disease cannot take a hold. Once a fish loses condition or is subjected to harsh netting or handling the fish is open to attack. Sometimes a fish may have some of the mucus removed during vigorous spawning. Small tufts of the wool-like substance on a fish can be treated with a dab of neat T.C.P. This may be necessary every three days or so. Good conditions in the pond will tend to keep the fishes free from the trouble.

Plants**plastic plants . . .**

I have recently been reading about a range of life-like plants which are made of soft plastic. I have never thought much of artificial plants but this new range is very good, and the manufacturers claim they can completely replace live plants. Surely if an aquarium was planted only with plastic plants the oxygen level would fall very low, resulting in trouble for the fish.

Plastic plants may make life easier for the aquarist, but I cannot think of any other benefit they may have.



Real plants in an attractive setting

As you so rightly observe, they play no part in the subtle process of water conditioning fulfilled by carefully selected real aquatic plants, which not only distribute oxygen in the water, but also remove or utilize carbon dioxide, nitrogenous wastes and several other substances which are harmful to the fish. They also provide natural shelter for the fish, which is particularly important during spawning periods.

Furthermore, most plants provide the leaf-eating fish with good green food. In certain plants the leaf not only has a Food value, but also a medicinal and tonic value for the fish. A good example of this is *Acorus calamus* (Sweet Flag), which possesses extremely efficacious medicinal qualities, not only for the fish, but also for human beings.

To my mind, only natural plants can impart a true beauty to an aquascape, which most keen hobbyists try to render as close to the natural habitat of the fish as possible. Though artificial plants may come reasonably close visually to imitating nature, to the discerning eye of the aquarist and the searching mouth of the fish, dead plastic is no substitute for living leaf-tissue.

V.T.

Koi



anchor worm . . .

Following your earlier advice I have been keeping a close watch on the Koi purchased in the Spring, after an anxious time before they settled down all seemed to be going well until recently when I noticed

some thread like objects protruding from behind the scales of several fish. I presume these are anchor-worm and would like to know the best treatment to use.

I hope that by the time this reply appears your Koi have recovered after removal of the offending parasite and after-treatment.

The anchor-worm was undoubtedly sold with your fish, probably deeply embedded in the body until growing out as you describe by September and usually with two egg-sacs clearly visible. They can be difficult to remove and if broken off by tweezers the remaining dead part can leave a serious wound.



The Anchor Worm, *Lernaea*

Therefore it is advisable to first weaken or kill the worm by touching with a strong salt or potassium permanganate solution when it may fall off or be easily pulled out.

Any damaged areas should be swabbed with a 2% solution of Mercurochrome, or if difficult to obtain you can use a mild household antiseptic. It may be necessary to repeat this treatment as wounds caused by anchor worms can be quite deep and easily infected by bacteria that are ever-present in pond water.

As your pond is not too large, the water can be treated with one of the proprietary medications sold specifically for the purpose, and it is advisable to repeat the treatment for three times at 7-10 day intervals in case any eggs or free-swimming larvae or nauplii exist.

You mentioned "Dipterex 80" and "Masoter", which are in fact the same compound, and I agree these are useful pond treatments against most parasites but can be dangerous in the hands of the inexperienced or unwary who may not know the exact volume of water to be treated. When using the powdered form of either of the above, the dosage is 1 gramme in 700 gallons of water.

This is strictly for Koi and can be damaging or lethal to other fish in a mixed pond, particularly to oke and rudd. The recommended application is safe for plants and will not affect biological filtration.

converting a swimming pool . . .

I have a small swimming pool 16 ft. x 12 ft. x 4 ft. deep, I propose to fill this to 3 ft. 4 in. and convert it into a Koi-pond.

The volume will be around 2,100 gallons and I plan to install an external filter, can you advise on the size needed, flow-rate and medium to use? Maybe I can siphon in under the medium and pump back the overflow from the top of the filter, any help would be appreciated.

In reply to your letter I would first advise that if your swimming pool is quite rectangular with vertical sides and a flat bottom, then the volume of water contained, according to the given details, will be near enough 4,000 gallons. (ie, 16 ft. x 12 ft. x 3 ft. 4 in. x 6.23 gal per cubic foot).

With this in mind, and following the simple guideline that the size of a biological filter should ideally be $\frac{1}{2}$ to $\frac{1}{3}$ the surface area of the pond, a maintenance-free under-gravel filter could best be constructed across one end 4 or 5 feet wide. This would certainly save a lot of work in making an outside filter alongside the pond.

If the pool is concrete it will be easy to build a barrier to hold back say a 9 inch depth of washed $\frac{1}{2}$ inch gravel, or if lined, many people have used heavy gauge plastic or polythene sacks filled with sand to form a barrier.

The network of pipes resting on the pond floor should be drilled through with $\frac{1}{2}$ inch holes about 3 inches apart, and the whole system spaced with a suction connection (or two) so as to provide an even pull through the filter-bed.

The plastic pipework should be $1\frac{1}{2}$ inches in diameter and the water pump should be rated at least 1,000 gals/hour

to probably pass not less than 800 gals/hour after allowing for friction losses and some restriction afforded by the filter-bed itself. Whatever pump you may choose must be capable of continuous operation year-in, year-out, and this will almost certainly mean an outside surface type for long life and reliability.

There is no objection to an external filter alongside the pool whether below or above ground, but I would suggest that to rely on any siphon action to feed the filter and pump out the water thereafter is asking for trouble.

At certain times of the year algae appear in profusion and sufficient to block most types of outside filters, that is quite apart from the work they have to do in biologically dealing with the waste products of fish etc. **H.A.**

Discus



soft water . . .

I hope you do not mind me taking the liberty of writing to you, as I am a little confused by other people's opinions and through a friend of mine your name came up as something of an authority on Discus fish.

I have been interested in fish keeping for some time and have come to a point in the hobby where my wife and I wish to keep Discus with the possibility of breeding. We have a spare 48 in. x 12 in. x 15 in. tank that we intend to use for Discus. We have read various books about water conditioning etc. and have also seen the fish, some at a price quite beyond 'the average'.

All dealers in the Oxford area say that the soft-water aspect of keeping Discus is rubbish and that they always use water straight out of the tap, not even bothering to use matured water, or even a peaty bottom, but all the available literature would point otherwise.

We have kept Angels successfully in ordinary water along with other people in the area but our immediate problem is this:

Do we go by the book and use peat and gravel with soft water or do we act on what the so-called 'professionals' do in the area? Are water softeners expensive?

We really do want Discus fish. We have a new tank. But what about this water business?

We hope that you will be able to help.



Soft water is considered a must for long-term success with Discus

I often receive letters from hobbyists who have been given some advice by their local dealer yet are unable to accept it. Always in the past it has resulted in some sort of unpleasantness, because I have been accused of 'not playing the game'. Hobbyists seeking my advice are given information which is based on many years of Discus fish keeping. It may not be the only way to look after these fish but it has certainly worked very well for me.

You say that all the dealers in your area have stated that the soft-water aspect is rubbish. Maybe so, but we know from the very many papers written on the subject that Discus fish in the wild are living in a water which is very soft (0 to 4 dGH), we also know that breeders in Europe—mainly Germany—and the Far East are breeding their fish in water which is similar to the Amazonian water. Surely, this must mean something. When Discus fish offered for sale are acclimatised to tapwater, which could easily be very soft, soft, medium hard or even very hard, depending where the water comes from, the fish are subjected to an alien environment, unless the tapwater just happens to be very soft.

I know of no-one who has had great success over a period of time who kept his Discus fish in water with hardness higher than about 10 dGH. That dealers use straight tapwater without even maturing it is quite understandable since they might not have the necessary storage capacity needed and even if they were to improve the water for the Discus fish any hobbyist could be in difficulties once he purchased a fish from such an aquarium. From my own experience I can say that Discus fish are always in better health or colour and feeding better if kept in a soft water and since there are quite a number of fish shops around who do keep Discus fish in such an environment I suggest you seek them out and purchase your fish there.

All Discus fish whether they are shipped from South America, or from Florida, which has become one of the largest forwarding centres of South American fish, or from German importers or even from the Far East are always shipped in a water which is never much harder than 2 to 4 dGH. I know of many cases where hobbyists have bought Discus and put them into a soft water within a very short time of their having arrived from either South America or the Far East and yet they still did not settle down. The explanation usually given was that 'Discus fish can be difficult.' I rather suspect that the fish were upset when put into dealers' tanks and spending, even a short time, in too hard a water.

My advice would be that if you are seriously thinking of keeping these beautiful fish try to provide them with a suitable environment which includes the use of soft water.

The most successful, and in the long run probably also the cheapest way, to obtain soft water is through a deionising unit. They are certainly somewhat expensive to buy initially (approx £200) but you will then be able to produce a perfect water for very many years to come. There are chemicals to regenerate them which works out at not more than a few pennies per gallon. It certainly is the cheapest way, and deionised water (which to buy from chemists will cost you a great deal more) is of course, always at hand.

E.S.



Coldwater Jottings by Frank W. Orme

ALL too soon, it seems, December has arrived and the year draws rapidly to a close. Despite the cold, prolonged spell of wet weather earlier in the year, the sun eventually appeared and gave us some very warm weeks to make up for summer's late start. The late appearance of the sun, preceded by a fairly mild winter, delayed early goldfish spawnings. From various parts of the country complaints were made of poor spawnings, often proving infertile. In the August issue of the Northern Goldfish and Pondkeepers Society newsletter Mrs. Pauline Hodgkinson wrote: "... though it seemed at the start of the season that many of our members had had a number of spawnings, we had little evidence of this on the show bench. Members of other societies all said that spawnings had been too few and too poor, with low rates of fertilisation. What could be the cause I wonder, could it have been the mild winter which failed to keep the temperatures in the tanks low enough to give the fish those few months of rest? Certainly my own fish seemed uninterested in breeding this year, and no amount of live foods would change their minds. It seems that this has been the same story the length and breadth of the country."

Talking to a well-known large-scale breeder of the goldfish varieties, I was told that he had suffered similar problems and spawnings had been very late. He laid the blame, in part, upon the mild winter temperatures, which had kept the fish active. Like me, he believes that a period of cold

induced semi-dormancy is good for the fish, and encourages earlier spawnings with a good percentage of fertile eggs. Equal blame was apportioned to the cold, dull spring weather, which failed to encourage the breeding stock to come into breeding condition.

Probably the greatest factor, which operated against early spawnings—and lack of breeding condition—was the low light intensity and lowish temperatures of last spring. Unless there is an adequate length of daylight hours of sufficient intensity, coupled to an increase in water temperature, the fish are unlikely to respond to the fishkeeper's inducement of additional feeding—livefood or other. Unfortunately, unless artificial heat and light is employed, the fish will only respond when, and if, the conditions are right—the calendar has no meaning to them—and it serves little purpose to force them into breeding. Unless the fish are truly ready, the spawning drive is likely to be less than vigorous and few eggs will be fertilized, that is

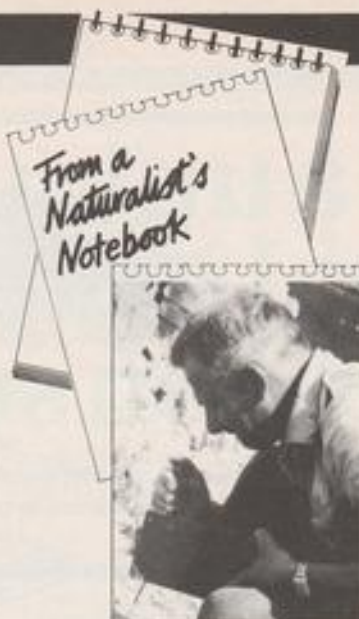
Continued on page 31



The semi-dormancy induced in goldfish by cold winters is probably necessary for successful spawnings

SINCE the first fishes evolved more than 400 million years ago, and later led to the evolutionary dominance of the vertebrates, and intelligence, evolution has not ended. Far from there being any doubt or discredit over the foundations of Darwin's work or reputable biologists doubting any evolution at all, a break-through has been made at the British Museum in tracing the fossil ancestors of fish which started the road to the vertebrates, and man whose embryo still retains gills from its fishy past. This ancestry of the vertebrates is to be published next year in a book by the British Museum.

Until comparatively recently few if any fossils older than the fishes were acceptable as their direct ancestors. Now research by Dr Richard Jefferies on the anatomy and early life history of starfishes, sea-urchins, so-called acorn-worms and other echinoderms has linked them with the primitive vertebrates. Gislen, a Swede, suggested over 50 years ago that skeletal plates link starfish with the calci-chordates, ancient marine animals only a few centimetres long. Named from its boot-like head, one of their earliest forms, *Cothurnocystis elizae* of the flat sea-floor 450 million years ago, was found as a fossil at Girvan in Scotland and is now in the B.M. It had gill-slits. Its brain was in the front of its tail with nerves ranging forward to the head and back to the tail-end. This was not a symmetrical animal like a fish. That came later, with a lateral line, in fish-like *Mitrocystella*, named from its mitre-like head, also a fossil in Ordovician rocks, 480 million years ago in France and Czechoslovakia. Neither had external gill-slits for their internal gills and the water escaped from holes at the back of the head. *Mitrocystella*'s fish-like brain was also where the tail joined the head. It began the evolution of jawless fishes when it began swimming forward like a fish.



by Eric Hardy

Wild flowers

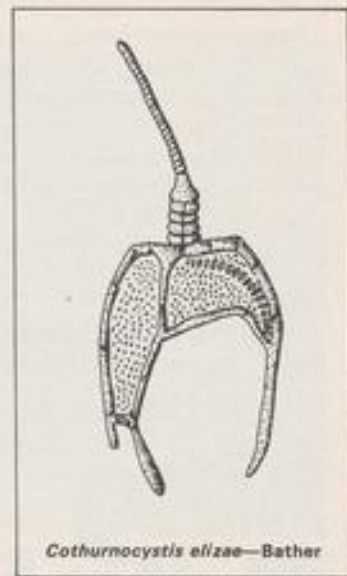
In the Highlands last summer I noticed how water-jobelia shared in the year's proliferation of wild flowers. It flowered in abundance all around the shallow margins of Loch Bar on Rannoch Moor, at the entrance to Glencoe. Masses of yellow fringed water-lily, (which isn't a water-lily but one of the bogbean family much cultivated in water gardens), made the finest show I've seen gliding an acre or so of the surface of one of the angling ponds in Abergele's Pentre Mawr park, in North Wales. On the nearby pebbly shore at Pensarn I counted 24 rosettes of *Mertensia*, the oyster-plant, at its only remaining site in Wales, having disappeared from former haunts at Anglesey's Cemlyn and Amlwch, as well as Dinas Dinlle.

Swordfish

The most unexpected result of the hot summer was the discovery of the first British record of the white marlin swordfish in the mouth of the river Leven at Ulverston in Morecambe Bay. Photographs were sent to the British Museum for confirmation.

Normally off North Carolina, it probably crossed the Atlantic with the Gulf Stream. Other swordfish have reached British waters before: a common swordfish of 11 ft length off Eddystone Lighthouse in June 1879 and a smaller specimen at Brighton in July 1931. This also comes from the Gulf of Mexico probably via the Gulf Stream. Swordfish are sometimes caught by trawlers off Southern Ireland following albacore. They are the largest of bony fish.

The Isle of Wight, where I was recently conducting some field-studies, receives more publicity for its sea-fishing than for its freshwater fish, so I was pleased to find Calbourne Mill stocked with trout. Carp are in a pond at Wycombe Farm near Niton, and with tench and rudd at Newport's old cement-mills. The owner of Bembridge Home (or Harbour) Farm, as in previous visits, kindly permitted me access to the island's best haunt of waterlife, the reedy duck-pools bordering the harbour road, where pochard, tufted duck and



Cothurnocystis elizae—Bather

little grebe nest and Cetti's warbler may be heard. There's a small heronry here, where we flushed 15 herons. In a gorse, reedy field we found a Dartford warbler, an occasional visitor to the island from nesting haunts at the New Forest's Hampton Ridge, Surrey's Thursley Common or Dorset's Arne and Studland Heaths.

The Nature Conservancy added to its North Solent Reserve 100 hectares of the Cadland Estate on the Hampshire coast, at the estuary of the River Beaulieu. Its shingle beach is the only surviving haunt of the little herb robert, *Geranium pusillum fosteri*, which is extinct at its previous haunts on the Sussex and Guernsey coasts.

Yellow horned poppy, thrift, sea-kale, sea-campion and sea-spurge grow abundantly and the reserve ranges inland from brackish lagoons to acidic valley marsh with an impressive array of habitats.

Rushes

Every pond-owner knows how leafless rushes are marked by only a tiny tuft of small brown flowers well up their round green stems, which feed them from photosynthesis after the early seed-leaves die off. I was recently brought a specimen of common jointed rush galled by the tassel-gall psyllid or jumping plant-louse *Lisca juncorum*. Its little rosette gall started

like a young flower, then became a tuft of reddish-brown leafy growths in which the egg develops and the plant-louse appears in autumn. Several such clusters may arise together low down on an infested rush and are easily overlooked among the other vegetation. A small fly preys upon this plant-louse.

Freshwater diatoms, microscopic single-cell plants, are distributed by the drinking habits of wild duck which end their courtship displays. Marine diatoms have now been found to be distributed in the closely-packed feathers of seabird plumages.

Coldwater Jottings

Continued from page 28

assuming that they can be induced to enter into a spawning drive.

In my fish-house the first spawning did not take place until the 21st of March although the pair had been placed together at the beginning of the month. The next spawning occurred on the 4th of May and, from then on, at regular intervals. Other than the increase in amount, frequency and quality of the food, no special effort was made to promote a spawning, for I knew well enough that the fish would spawn when they were ready. The result has been satisfactory, and I have raised sufficient young to satisfy my needs for future breeding purposes. Despite this, I hope that next season is a little kinder to the breeder of coldwater fish.

Winter, as I have remarked on previous occasions, is a quiet period for the coldwater fishkeeping enthusiast and is therefore an ideal time to overhaul equipment. Waterpumps can be stripped down, cleaned, lubricated

and any worn parts replaced. Air-pumps can be checked over and diaphragms renewed if necessary. All electric wiring, and so forth, can be closely inspected and any which are found suspect replaced, if only to avoid the possibility of an accident at some future time. If more tanks will be required, why not construct them whilst there is little else to occupy the time. By devoting time during this slack period to these various jobs all should be ready, and in good order, for the coming spring. A little attention now could prevent the frustration of having some essential piece of equipment breaking down just when it is most needed.

I wonder whether any other fishkeepers society is as stringent in their required initial qualification for would-be trainee judges as the Northern Goldfish and Pondkeepers Society? This Society requires that any member who wishes to be considered as a trainee judge must have a minimum of ten year's experience of breeding goldfish, which must be with a number of varieties—not restricted to a single type. Further, the applicant must also have exhibited, with some success, the young which has fish have produced during the stipulated ten year period.

The reasoning behind this requirement is that no amount of studying

of written works can be a substitute for practical experience, for knowledge can only be truly gained by the selection of adult breeding stock; selecting young progeny with the desired qualities and, subsequently, gaining awards with those young in the breeders classes at open shows fairly consistently. During this time the applicant will have become well-grounded in the fundamentals of judging a good fish from one of indifferent quality. As the Society claims; exhibitors enter their fish in shows in the expectation that their fish will be judged, and placed, only by people who have the necessary knowledge and experience to assess the finer points of the various varieties of the fancy goldfish. They, therefore, consider that only those who have plenty of practical experience upon which to base their training should be considered as potential judges of fancy goldfish.

Whilst this stringent condition will debar many of their members from being accepted as trainee judges, there can be little doubt that those who do qualify should be well able to carry out the responsibilities of being a judge.

Being the end of the year, I wish all readers a good, relaxed Christmas and a year of happy and successful fish-keeping during 1984.

Tomorrow's AQUARIST



DESIGN-A-FISH COMPETITION

Sponsored by
TETRA



HAVE you ever fancied bending the rules of nature? If you have, this is your chance—don't miss it! Let your imagination run riot and design your very own, personal fish. As long as your "creation" appears to be biologically possible, it will qualify for our Design-a-Fish Competition.

What we would like you to do is use your knowledge of biology in an original way by designing a fish that:

Lives in a fast-flowing stream with a pebbly bottom. Its diet consists entirely of snails which only come up to the surface at night, at other times remaining buried four inches below the pebbles. The fish, however, is only active during the day and can, therefore, only feed during this period.

The Prizes

These highly desirable and valuable prizes have been very kindly donated by Tetra. We have also chipped in with our own bit.

First Prize in each group will be worth £30 of Tetra products consisting of Tetra Min Staple Food, Doro Min Food Sticks, Tetra Conditioning

Food, Tetra F.D. Tips (Freeze-dried Food), Tetra Aquasafe, and a copy of Tetra's new publication, "Tropical Aquarium Fish" by Dr. Ulrich Baensch.

Our own award to the winners of the **First Prize** in each age group will be a free 12-month subscription to the *Aquarist and Pondkeeper*.

Second Prize in each age group will consist of a Tetra Starter Kit which includes a tub of Tetra Min Staple Food, 100 food tablets of Tetra Tabi Min, a bottle of Aquasafe, a Tetra Billi-Filter, a Nitrite Test Kit, a copy of the Beginner's Aquarium Digest, a Tetra Pisces Thermometer and one issue of *Aquarium Digest International*.

In addition, there will be a 6-month supply of *Aquarist and Pondkeeper*.

Third Prize in each age group will consist of a copy of Tetra's "Tropical Aquarium Fish" by Dr. Ulrich Baensch.

Our own contribution will be a 6-month supply of *Aquarist and Pondkeeper*.

How to Enter

The competition is divided into two age groups:

- Under 15 years of age on 1st December 1983.
- Between 15 and 18 years of age on 1st December 1983.

1. Draw your fish (do not write a description of it) on a plain sheet of paper measuring not less than 8 in. x 6 in. You may, of course, label your drawing.

2. Print your name, address and age clearly on the back of your entry in **BLOCK CAPITALS**.

3. Write "Design-a-Fish Competition" clearly along the top edge of the envelope.

4. Post your entry to reach us **Not Later than 31st January 1984** at the following address:

**AQUARIST AND PONDKEEPER
BUCKLEY PRESS
THE BUTTS
HALF ACRE
BRENTFORD
MIDDLESEX TW8 8BN**



AQUARIUM FISH PHOTOGRAPHY

by A. van den Nieuwenhuizen

I AM often asked how a good photograph of an aquarium or a fish is taken. People say they have tried everything, including using the latest equipment, without satisfactory results. The following I consider to be the basic rules which must be followed in order to achieve success.

One should acquire a fundamental knowledge of photography first, in relation to ordinary subjects to be photographed.

A feeling for composition. No matter how splendid a fish is it will rarely make a good photograph unless thought is given to the background too.

First learn about the fish. Not, for example, whether it is a guppy or a swordfish, but when a fish feels at home and, in particular, when it displays its colours to the greatest effect. Where it likes to swim in the aquarium, where it likes to turn and where it takes up a stationary position. When the light from taking photographs will be too much for a fish and when it will take fright and draw in its fins.

The tank should be set up properly. This determines how fish behave and the possibilities they offer to the photographer. If necessary the aquarium must be arranged specifically to suit one's purposes.

Choose a suitable camera. I recommend a single-lens reflex camera on which the automatic exposure facility can be turned off. The glass of the aquarium is liable to cause problems if the automatic exposure is used. It is the fish and not the glass which is being photographed.

It is essential to be able to change the lens. A focal distance of 50 mm is unsuitable for fish photography. One must also have lenses for close-up photography, a bellows attachment or extension tubes.

Auxiliary lenses for close-up photography: One can come nearer to the subject without an accompanying decrease in the light intensity. However, they cannot be used with all types of lenses. They are useful in conjunction with lenses which have short and medium-range focal lengths.

Extension tubes: these always entail some light loss. In fact, to use them effectively means one must accept some additional complications. The right aperture and shutter speed combination which will give a successful exposure when a particular extension tube is used with a particular lens, will vary if the same tube is used with a lens of a different focal length. Initially, therefore, one must take photographs using different aperture settings in order to discover which is the correct one. Carefully kept notes are a big help so that one can be sure at a later date which was the correct setting and use it again without having to start all over again. The depth of focus also varies when one uses the same extension tube with lenses of differing focal lengths. In this way it is possible to photograph the same fish in the same spot either 'lifted out' from or framed within the tank arrangement and plants.

A suitable light source. I recommend electronic flash. A computer flash attachment is not sufficient.

Anyone who wants to proceed beyond the first stages needs moveable (often several) flash lamps and must be able to turn off the computer flash system. This is far too likely to be deceived by the glass of the tank. It is important to have plenty of power as far as the lamps are concerned. In this way, it is possible to reduce the aperture setting appreciably, thus achieving more depth of focus and at the same time coping with the extra light needs which are brought about by the use of the extension tubes or bellows attachment. The normal aquarium lighting is not turned off. The powerful flash lamps can be placed somewhat at a distance and thus, by playing with the light, the subject of the photograph can be made more plastic.

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Home aquarium containing *Badis badis* males displaying aggressive behaviour (close-up shot using extension tubes, diffused lighting and four lamps)

Public aquarium: beautifully coloured fish stand out to great effect against the dark background. Here can be seen Discus fish in the Wilhelma in Stuttgart in West Germany. The fish are swimming a few metres

from the front glass of the aquarium. The flash is positioned to one side, directly by the pane of glass. One must wait patiently until the fish swim into the correct position





Fighting Zebra cichlids (colour variation of *Cichlasoma nigrofasciatum*). These are young fish disputing territory. (Close-up shot using extension tubes and electronic flash taken at an angle at the front of the tank)

Guppies photographed in a small aquarium of 50 x 30 x 30 cm. Such shots demand a lot of patience. This was taken using four lamps, partially screened in order to create very diffused lighting and so gently illuminate the bodies of the fish



In order to capture the fish in their best possible coloration they are not photographed until they are perfectly at home in the aquarium and behaving peacefully. Only then is it possible to photograph them using a lens of medium focal length and extension tubes without alarming them



Press Release



An easy start to tropical fishkeeping

If you have ever been tempted to take up the hobby of tropical fishkeeping—only to be put off by a bewildering array of apparently necessary equipment, then the world's leading fish care company now has the answer.

Tetra has just brought out a Starter Kit which contains a small selection of basic products and advice to introduce you to the hobby. All you need in addition is an aquarium and the fish!

The new Tetra Starter Kit includes a copy of the "Beginner's Aquarium Digest"; TetraMin Flake and tablet foods for tropical fish; Tetra AquaSafe Conditioner for aquarium water; a Tetra Billi foam filter; a Tetra Nitrite Test Kit; a free Aquarium thermometer and free hobbyists' colour magazine.

And on the back of each "kit" are listed 10 easy steps to tropical fishkeeping which explain precisely how to set up and maintain an aquarium of tropical fish.

A Tetra Starter Kit provides a foolproof way of ensuring a successful beginning to a most rewarding hobby for you and your family. At just

£12.33, it could provide the perfect answer to those Christmas gift problems.

Available from leading pet stores.

Press enquiries: Christine Warwick, Eastleigh (0703) 619791.



Water—The vital ingredient

IMAGINE the brown, peaty waters of a South American stream, a heavily weeded stretch of a tropical Asian canal, or even the rather murky depths

of a local pond in this country. Surely the water in these environments, which all contain fish to a greater or lesser extent, could not be much farther removed from our mains tap water—which we all use to keep fish in!

Most aquarists know that fresh tap water can be a little harsh on fish, and it may also contain chlorine and metal ions which can be toxic to even the toughest fish. Allowing tap water to stand for 24 hours at room temperature overcomes some of these problems, but this is sometimes inconvenient or even impossible to carry out.

Therefore, it is obviously a good idea to utilise one of the tap water conditioners/dechlorinators which are available. However, whereas in many instances the aquarist has to purchase a tap water conditioner *and* a dechlorinator, in the case of *Tetra AquaSafe*, the two procedures are carried out in one go. Whenever a partial water change is carried out (which should be every 2-4 weeks in most tanks), or whenever a new tank is set-up, *AquaSafe* should be added. *AquaSafe* not only eliminates chlorine and potentially toxic metal ions like copper, but it also effectively 'ages' new tap water, thereby protecting the gills and other delicate mucus membranes of the fish. In addition to this, *AquaSafe* also contains a buffer to prevent marked pH changes in freshwater aquaria.

Remember, *AquaSafe* is the *complete* tap water conditioner!

Many of the tropical freshwater fish we keep (especially egg-layers) thrive in the brown, peaty conditions which occur in their jungle homes, and certain fish will only breed in the aquarium if such conditions are provided. Recreation of these conditions in the home aquarium might seem difficult to the novice aquarist, but this is where *Tetra Blackwater Extract* comes to the rescue. Based on a secret recipe (known only to the scientists based at the Tetra Laboratories in West Germany), *Blackwater*

PRESS RELEASE

Extract contains a blend of plant and peat extracts, vitamins etc. Not only does regular use of *Blackwater Extract* improve the general condition of fish like tetras, discus, many barbs, some gouramis, killifish and the like, but it helps to prevent algal problems in the aquarium and actually encourages many fish to spawn. *Blackwater Extract* is, in fact, used routinely at West Aquarium (Europe's largest breeder of aquarium fish)—and what better endorsement could there be than that? Your fish may not see the Amazon again—so why not bring a little bit of it to them!?

In a set-up tank, *Blackwater Extract* should be used about every two weeks, and it may be used in conjunction with *AquaSafe* to acclimate new, delicate fish to local water conditions.

AquaSafe and *Blackwater Extract* are just two of the *Tetra* range of water treatments. Others include *ContraLack 80* (a safe, effective way to eliminate white-spot), *FungiStop* (the in-tank treatment for fungus) and *General Tonic* (the world famous water treatment for a whole range of fish disease producing organisms).

Technical enquiries on any aspect within the *Tetra* range should be directed to *Tetra Information Centre*, 15 Newlay Lane Place, Leeds LS13 2BB, whilst trade enquiries should

be sent to Tetra, Mitchell House, Southampton Road, Eastleigh, Hants. SO5 5RY.

Big Increase expected in the keeping of small pets

WITH increasing leisure time, all sorts of people are finding that keeping small creatures helps to absorb time and interest.

Mike Clarke, Product Manager for the newly-formed PetLove Products Ltd within the Interpet group, sees providing products for small pets as an increasing business potential, whilst filling a social need.

Mike was the Southern Area Representative for Interpet Ltd, Dorking-based aquarium product manufacturers and distributors. He says "I really enjoyed being involved only in aquatics, but when Interpet gave me the opportunity to run the new PetLove range, I was thrilled at the opportunity".

Interpet are well-known as experts in aquarium products and have wanted to find an opening in general pet products for some time. When Peterama of Chelmsford ran into trouble, this provided the ideal opportunity.

PetLove Products will be distributing the major products previously distributed by Peterama, in particular the well-known Hykro range and Cat Love, the very popular treat for cats.

Fish of Fishes fed and supplied by King British

WINNER of the coveted Fish of Fishes award at this year's Yorkshire Aquarists Festival was Tommy Stansfield's *Cichlasoma zymphilum*.

Judges awarded the fish 82.5 points, the highest marks in a record entry of 43 different specimens, with their owners travelling to the Doncaster show from as far afield as King's Lynn, Droitwich, Hendon and Kingston.

Fish of Fishes is the Festival's top award. To enter the competition fishes must have won best in show at other shows throughout the country or a star award at one of the Yorkshire Association shows.

Tommy Stansfield comes from Otley, West Yorkshire, and his award-winning fish is fed on a mixture of live food and King British Tropical Flake to provide a complete balance of vitamins and protein.

"Tommy feeds King British Tropical Flake to all his fish", said King British managing director Keith Barraclough. The win was a dual triumph for Mr. Barraclough since his aquatic shop in Haycliffe Lane, Bradford, originally supplied Tommy with his Fish of Fishes, which was bred in England by the British Fish Breeding Company.

YAF show secretary and floor manager, Norman Bolton said: "This year in particular the quality of the fish was absolutely magnificent. The winner was in very good condition. It was showing itself well in colour and deportment, and it was a good choice."

NEXT MONTH

ATLANTIC WRASSES. Dr. Robert Goldstein describes some of these highly colourful fish. Illustrated in full colour.

THE BASIS OF FISH HEALTH. "Mayfly" begins a brand new series on a subject of vital interest.

Jack Hems picks out **THE CONGO TETRA** in next month's SPOTLIGHT feature.

Plus all your regular favourites!
NOTE: Due to ever rising costs we regret the necessity of a small price increase as from January 1984, but at 80p *The Aquarist* will still remain the best possible value for the enthusiastic fishkeeper.



AQUARIUM FISH PHOTOGRAPHY

Continued from page 35

The correct use of flash is full of pitfalls. Every animal lover who boldly photographs at the zoo, using a camera with a flash attachment, is inevitably disappointed. The flash can be seen on the photograph, the exposure is wrong. The flash must be away from the camera. It must be outside the image field of the camera. With wide-angle and normal lenses this is difficult. One often needs to use lenses with a high focal length measurement. The ideal situation is one in which it is possible to position the flash lighting above the aquarium too. The lighting is thus made more natural. Often, however, one can only illuminate the subject from the front of the aquarium. In which case one should try to create a certain amount of light to the side. In this way a more plastic result is obtained. Someone photographing alone must support the lighting on a stand and photograph the fish only in that part of the aquarium where no reflection is given off from the glass. Conversely, one can persuade one's wife or a friend to hold the lamp. Working with another person takes a lot of practice. The lamp must follow the movement of the camera.

The correct exposure is not difficult to obtain. The exposure time is determined by the flash. The amount of light which floods on to the film is controlled by the aperture setting. One finds the correct setting by trial and error and careful notetaking. It is affected by:

The thickness of the aquarium glass. The thin glass of the home aquarium absorbs less light than the reinforced glass of the public aquarium.

The distance of the fish from the glass. The deeper into the aquarium the fish swims the greater is the light loss.



Thalassoma quinquevittatus is a very fast-swimming labroid (Red-striped Wrasse). One can photograph it in two ways. Either whilst it is resting amongst vegetation which forms a

hiding place or one can wait patiently until it appears again (as here) and then take the shot at the appropriate moment. Long focal length with extension tube and flash



Fast-moving fish such as *Mirolebrichthys evansi* must be followed by the camera if one wants to photograph them as they are swimming. It is important to ensure that the flash is positioned outside the image field in order to avoid reflection. In

The tank arrangement. Stone walls absorb more light than the reflecting surfaces of a tank with glass sides. The nature of the substrate and plants, too, affects the amount of light which is needed.

The fish itself. Brilliant scales need less exposure than dull-coloured flanks. Of course, both the outside and the inside of the glass of the aquarium must be completely clean and the water crystal clear. Otherwise the resultant photographs will be indistinct and fit only for the waste paper

addition, the fish should be swimming against a suitable background so that it stands out and one must take care with the depth of focus in order to keep the background as indistinct as possible

basket. Aquarium and fish photography is certainly not for the impatient. Many shots have taken me a whole day. Others are achieved in a few seconds. But this is seldom. It is necessary to get sufficient practice, to keep precise notes, in order to be able to compare photographs and exposures at a later date and, most of all, to be self-critical and sufficiently courageous to throw unsatisfactory photographs into the dustbin and start again. The best of luck!

COMMENTARY



by
Roy Pinks

IN AN otherwise enjoyable thriller I read recently, H. G. James described a certain individual languidly feeding his tropical fish. It was stressed that he offered the seed from his fingers whilst the glowlight tetra covered beneath the shells! No prizes for listing the three absurdities in this episode, but the mention of seed does remind me that the matter of diet for pet fish is by no means an open and closed affair. There once was a time when few would offer fish anything beyond the contents of the right sort of packet—even though the main ingredient may have been sweet biscuit crumbs—and I cannot honestly recall from the results that one had many serious complaints as to the outcome. Most fish survived, some bred and a few died, which is pretty much what happens now.

However, such are the trumpeting about modern research into the mysteries of fish diet, that the conclusion should now be that results are significantly better than they were and that the right sort of diet for particular purposes is now more readily available and effective. I think there is little doubt that fish foods (at least, certain of them) are well balanced, attractive to the fish and pleasant to use. In particular the non-greasy flake foods are a gift to the heavy-handed beginner

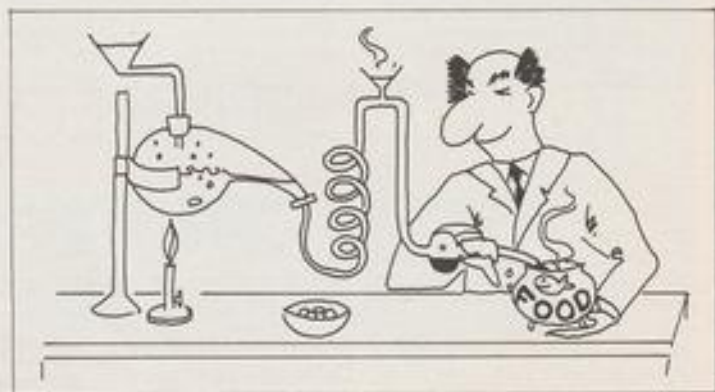
because they really do seem to protect him against pollution unless they are grossly over-fed. For pond fish there has been a swing away from flaked food (a pity, I feel) towards pellets: whatever their failings, which are many, their content once ingestible, is welcomed by a wide range of fish. So we can say in general terms that if all we are concerned about is to keep our fish alive and well nourished, we have never been so well off.

There are, of course, those enthusiasts who cherish secret formulae and who produce astonishing concoctions for their charges—usually the larger species for some odd reason—though they rarely have evidence for conclusively backing them against commercially available foods. One wonders why they bother, when the economics are so questionable, and whilst so many others have achieved good results by doling out helpings of dog or cat food. The latter, on a strictly experimental basis, seems to have pleased many fanciers aiming to add flesh to show fish, but should be treated with great caution by all other users. All trials with non-live food should be carried out in unplanted tanks containing only a few fish, just in case everything goes wrong, as such will limit your losses.

So much for keeping fish alive—but is this the end of the matter? There is an emerging feeling that in many senses our fish are now too well fed, and in some circumstances this can be a retrograde step. We certainly can't have it all ways, but we should be aware

where the limitations are, and this is an area on which the manufacturers will tend to be reticent. Having given us the means to maintain healthy fish, can they be blamed for not warning us of possible shortcomings in their suggested diets? Of course not: they are marketing "general" foods, and we buy them, warts and all. We must look to our tank and pool management to overcome the likely drawbacks.

The alleged shortcomings relate to breeding potential, hardness and rate of growth and obesity, and especially in relation to pond fish. The "push" supposed to exist in the pool pellet is reckoned to be the main culprit, being likened to the types of food now used in trout farms, for example, to achieve maximum growth in minimum time. I have some sympathy with the view that protracted use of this type of food results in big soft fish, ideal for the table but pretty useless for anything else. There are tales, well founded, I am sure, of escapee salmon and trout contracting disease far too readily and infecting otherwise healthy "wild" fish in the vicinity. This year, when I have shovelled pool pellets into my pond fish during a summer of exceptional benevolence, absolutely no fry have appeared, nor have there been any outward signs of interest in spawning. As in the past, pond owners have reported to me sudden deaths of fine looking fish bearing no signs of disease, from which one usually concludes that they have rapidly overgrown their surroundings.



COMMENTARY

It is interesting to bear in mind that nature encourages procreation in conditions of hardship, not luxury. To bring a plant into bloom one starves it, for example, and there is a tendency to breed when the species is threatened. It seems highly likely that the single factor which our fish lack is a healthy

measure of neglect at the right time. This would suggest that we should give them an initial uplift after their winter rest, a good feed with earthworms before the breeding season and a restrained diet of pellets during the rest of the season. It should be noted that in well stocked pools (i.e. adequately planted but not overcrowded with fish) most fish will do well with-

out artificial additions of any sort, and it would seem that if they are to breed, confine them to a natural régime. In general it is wisest to assume that most fish are over-fed, and if you disbelieve this try experimenting with the quantities offered until you achieve a collection of good looking sleek and fast moving fish. Bear in mind always that fat is not fit. Like us, in fact.

PRESS RELEASE

Space age thermometers from Tetra

EVERY aquarist knows that fish (even goldfish) do not like fluctuating temperatures, and many fish actually have quite narrow temperature preferences. Hence the need for a good, reliable thermometer is paramount in any aquarium—whether it is coldwater, tropical or marine.

Using a range of specially designed, crystal thermometers, which were produced as a spin-off from the American space programme, Tetra have now added four aquarium thermometers to their already extensive range of aquatic products.

As with other similar thermometers, these are mounted on the outside, and the four Tetra thermometers are: 'Pisces'—for tanks up to 10 gallons. 'Neptune'—for tanks up to 29 gallons. 'Nautilus'—for tanks of all sizes. 'Temp-Alert'—for tanks of all sizes.

Tetra thermometers have a number of interesting features. Perhaps the most important is that they are all moveable, and hence their position on a tank can be changed or they can even be moved from tank to tank. In particular the 'Nautilus' is mounted on the tank in a horizontal position and gives a temperature reading in degrees Fahrenheit and degrees Centigrade. The 'Temp-Alert', however, is truly unique. Circular in shape, it also has a moveable pointer-arrow which tells the aquarist, at a glance, if the temperature is too high or too low.



Why not smarten up your tanks with a new Tetra thermometer?

Recommended selling prices (including VAT):

1. Hydro-Clean 20/4: £5.99.
2. Thermometers — 'Pisces': 99p; 'Neptune': £1.29; 'Nautilus': £1.39; 'Temp-Alert': £1.79.

Trade enquiries: Bill Patterson, Tetra, Mitchell House, Southampton Road, Eastleigh, Hampshire SO5 5RY. Tel: (0703) 619791.

Technical enquiries: Dr. C. Andrews, Tetra Information Centre, 15 Newlay Lane Place, Leeds, Yorkshire LS13 2BB. Tel: (0532) 555960.

Improve your undergravel filtration

UNDERGRAVEL filtration is a very popular method for filtering aquarium water, and is, of course, essential in most marine systems. However, normal undergravel filtration suffers from a number of disadvantages, the most important of which is that (even in quite 'clean' tanks) the gravel compacts

with time and actually becomes clogged with debris. This can result in a serious decrease in filter efficiency—and even necessitate a total tank clean-out (which is something that no aquarist wants to do too often!)

However, now available for the first time in this country, is the Tetra Hydro-Clean 20/4, a combined aquarium siphon tube and gravel washer, a piece of aquarium equipment which has become almost 'standard' in North American fishkeeping. It consists of a section of wide bore, heavy duty plastic tube and a length of non-toxic polythene tubing, this self starting siphon actually removes debris, uneaten food, etc. from the gravel with the waste water—but leaves the gravel just where it is wanted—in the aquarium. The tank decor remains undisturbed—even the plants!

Up to 20 gallons of water (plus organic debris, etc.) can be removed in 4 minutes, so the gravel can be washed while a partial water change is carried out. However, the flow can be controlled by squeezing the polythene tubing, which also means that the Hydro-Clean can even be used to wash coral sand in a marine tank.

Naturally, regular use of the Hydro-Clean does not harm the helpful bacteria in the filter bed, but actually helps maintain conditions in which they can thrive. The result is efficient long-term undergravel filtration—which is good news for the fish—and the aquarist!



SPOTLIGHT

ON PLATIES

PLATIES is the popular name (the derivation of which is explained below) used to describe a number of livebearing freshwater tropicals probably known to pioneer German aquarists as early as the late nineteenth century. In the wild state platies are native to the eastern slope of Mexico. They are nowhere near so attractive in appearance as the platies produced in captivity from aquarium-bred sports or inter-specific hybrids though, parenthetically speaking, collectors in far-off days were not unaware that many of the wild fish (basically grey or grey with black specklings or dark coloured in the caudal base) gave hints of the beauty waiting to be developed by keen and perceptive hobbyists.

Slightly larger fish commonly called swordtails live in the same or near to far-distant waters. The waters favoured by platies and swordtails (both species swim in large groups or shoals) vary from deep and fast-flowing over a stony bed to shallow and slow-moving (or still), with masses of aquatic vegetation crowding the bottom. The temperature of these waters differ with the locality; so, too, does the chemistry of the water. The striking characteristic of swordtails is the prolongation of the lower caudal rays of the male to form a sword-like appendage.

Between the two World Wars platies were referred to the genus *Platypoecilus* (Günther, 1866) while swordtails were referred to the genus *Xiphophorus* (Heckel, 1848).

by Jack Hems

But some twenty years ago, two ichthyologists (Rosen and Bailey), after a lot of investigation into the structure of the gonopodium of platies and swordtails, initiated, by the way, by earlier workers in the field, proved beyond scientific argument that the genus *Platy-poecilus* is identical with the genus *Xiphophorus* and so the incorrect technical name of *Platy-poecilus* was suppressed in favour of the technical name of *Xiphophorus*. (It is hardly necessary to say that, platies and swordtails written about in books and magazines published more than two decades ago are invariably alluded to under their erroneous scientific names.)

The range of the various species, sub-species, geographical races, etcetera often brings some of them together in the same waters yet, interestingly, no cross-breeds or, put another way, progeny resulting from cross-matings appear to exist in nature whereas so-called platies or swordtails (singly or both), when placed together in the home aquarium, will breed together and produce, as far as we can ascertain, a number of fertile, if not all fertile, offspring. For this reason we have at the present time lots of attractive fish developed by dedicated hobbyists over the last fifty years. In the 1950s there were nine varieties of platy recognised by aquarium societies (see *Freshwater Tropical Aquarium Fishes*, Hervey & Hems, 1952) in Britain. At the present day there are dozens more. Prom-

inent among the innovations are fish with enhanced and, maybe, sometimes quite bizarre finnage, new colour patterns, and stunningly coloured selfs.

Apart from the ubiquitous guppy (*Poecilia reticulata*), *X. maculatus* did much to popularize the hobby of tropical fishkeeping about the time of World War I. About two decades later another platy appeared on the market. Because of its variable colouring it was given the popular name of variegated platy or variatus. This species was first described for science by Meek in 1904. The female attains a length of 3 in (slightly larger than the female *maculatus*), the male about 2½ in. Furthermore, the male has the distinction of wearing a dusky marking to the rear of the gonopodium which is reminiscent of the dark marking which stains the swollen abdomen of all gravid female livebearers. Some strains of the variatus are of a rare beauty.

Keeping platies is not difficult. A tank measuring about 18 in. by 12 in. by 12 in. will afford ample swimming space for a pair. A spare tank or two is recommended for raising a goodly number of offspring. Culling is always necessary to prevent deterioration of stock. Placing the best with the best is a wise course to take. A tank for platies should be set up with plants and so on with or without a substrate. A tank without a substrate should have the underside of the base painted with a black or green oil paint to preclude artificial or bright natural light

SPOTLIGHT

bouncing off the bottom and frightening the fish.

Substrate or not, plenty of submerged plants are necessary, potted, that is moveable, or sunk into well-washed compost, to serve as hiding places for fry. Among the best plants to introduce are *Myriophyllum scabratum*, Indian fern (*Ceratopteris thalictroides*), thickly massed *Vallisneria spiralis* and, if one can get it, one of the lesser bladderworts (*Utricularia* spp.). Temperature should be maintained at about 75°F (24°C) to 80°F (27°C). At a temperature in the middle to upper seventies, a fertilized female will give birth to young

about every 4 to 6 weeks. As few as ten or as many as a hundred tiny fry may be contained in a brood. A well-filled (with young) female may take an hour or more to drop all her fry. The moment fry are expelled from the female's vent they seek the bottom, tarrying there for a minute or two before swimming in rather an erratic—certainly not in a direct line—to the surface where they take in a gulp of atmospheric air. This gulp above the surface fills the air-bladder. Immediately the air-bladder is filled, the fry swim towards the light and a tangle of plants which represent a refuge from cannibal parents. The introduction of extremely active live food into the breeding tank does a lot towards keeping infant losses at a low level. For one thing, it helps to distract the parents' attention away from their fry. For another thing, it gives the fry time to adjust to the ever-present danger around them and avoid it to the

best of their ability. Better still, after the fry are born, remove the adult fish to another tank. Growing fry need plenty of food of the right size. Start them off with dust-fine dried food, micro worms, and the like, and then follow on with freshly hatched gnat larvae, Grindal worms and so on.

The pH and hardness of the water is not all that important. What is important, however, is that the water should be clear and clean. It is recommended that partial changes of the water should be made every so often. All water added must be of the same temperature as the water in the aquarium. Mains tap water should be left to stand for several hours before use to rid it of chlorine gas.

Given proper care and attention, platy fry should reach sexual maturity within the space of four months. Daily observation of the anal fin of the fry will enable the aquarist to distinguish the sexes apart.

BOOK REVIEW

Reptiles and Amphibians by Joan Palmer. Published by Blandford Press, Poole, Dorset at £3.95.

I can think of no more helpful addition to the vivarium keeper's library than Joan Palmer's 94-page book on the management of reptiles and amphibians in captivity. The book deals with a goodly number of newts and salamanders, frogs and toads, lizards and snakes, tortoises and terrapins. For the benefit of the enthusiast, the author has included some brief notes on alligators and crocodiles. These notes, however, are merely interpolated as a matter of interest for, as the author tells us, all species of crocodile and alligator are protected throughout the world and in Britain, at any rate, the possession of one requires a licence under the Dangerous Wild Animals Act, 1976.

The first chapter touches on scientific

classification, food and feeding, snake venom and its effect on the body tissue and nervous system of the victim, the life cycle of amphibians and the accommodation of vivarium inmates in general. Next follows 5 chapters, each devoted to the amphibians and reptiles covered as separate groups mostly with lists giving each recommended creature its specialised requirements. Illness and how to recognise and deal with it, even though there may be no conspicuous signs of trouble at the outset, is a valuable

feature of this book.

The remaining chapters are concerned with recording and conservation in the wild, how to go about obtaining the creatures which appeal to you, how to join a herpetological society and the laws and regulations concerning certain amphibians and reptiles taken from the wild. There are two pages of *Useful Addresses* (the names of herpetological societies among them), and a well-chosen list of books and magazines to extend or improve your knowledge of the hobby under the heading *References*. The Index runs to 4 pages and there are few typographical errors or misprints in the text. There are 33 black and white reproductions of photographs and 5 well-executed line drawings. The photographic illustrations are the work of Mr Christopher Mattison. His cover photograph, in natural colour, of a White's tree frog, is exceptionally good. All in all, *Reptiles and Amphibians* will surely increase interest in vivarium keeping.

JACK HEMS



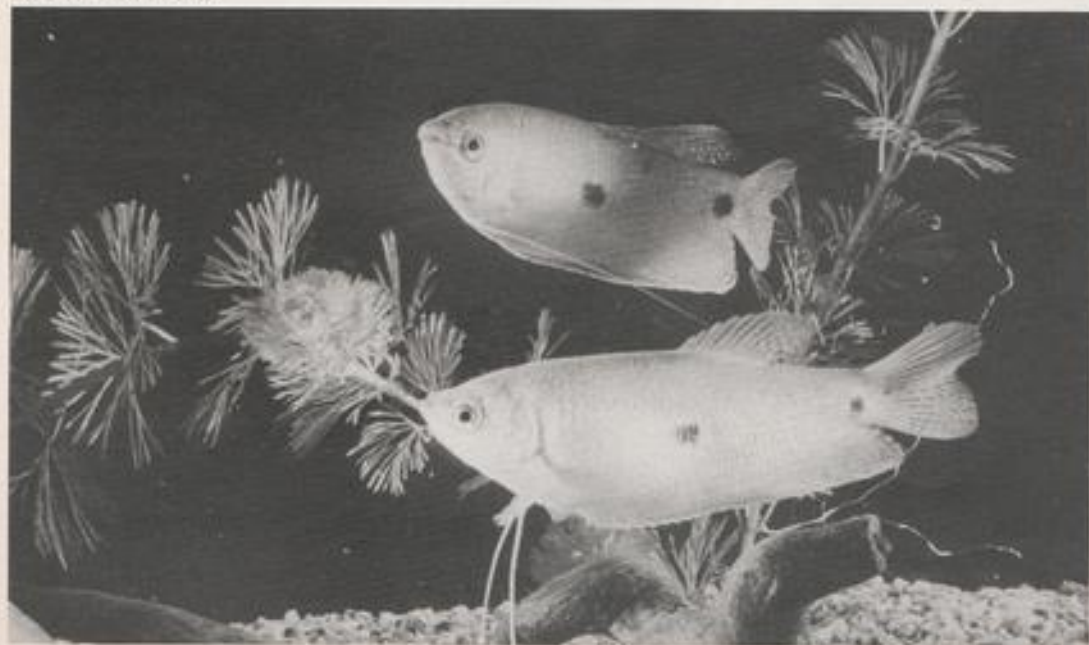
The Opaline Gourami

by
R. Zukal

This fish was made available to the aquarist hobby when it was discovered on the island of Sumatra at the end of the last century. Its distribution ranges, however, through the whole Malaysian peninsula, Thailand, Burma, Vietnam and the islands of the Indo-Australian archipelago. The body shape gives one an impression of sturdiness which is created by the depth of the fish in relation to its length and the well-developed anal fin which runs along most of the body. Of particular interest are the elongated, threadlike pectoral fins with which the fish continually searches the bottom for food. They are not only organs of touch, but also ones with which the fish can "taste" and "smell".

At frequent intervals the fish swims to the surface and gulps in air. This air is passed through the labyrinth in the head of the fish, the oxygen is absorbed and the used air is expelled. Nature has bequeathed this organ to the fish to enable it to survive in waters which have a low oxygen content and so ensure the survival of the species. The absorption of atmospheric oxygen is essential because in its natural state of swamps, rice fields and so on the fish lives in very warm water lacking in oxygen and it would not be able to obtain a sufficient supply of oxygen directly from the water by means of its gills. If it were not capable of "gulping" in air, the fish would suffocate. Although it may sound strange, the majority of labyrinth fish are capable of drowning. Any aquarist who has kept these fish can testify that they will drown if they become trapped by the heater or filter and so cannot take in air. Similarly, if a piece of paper is laid on the surface of the water in which labyrinth fish are kept, they will soon succumb. If a labyrinth fish jumps out of the tank, however, it will live quite a long time and it can be saved provided the

The pair—female above



Company Profile

Xotic Pets Ltd.



A view of one of the marine community tanks at Xotic Pets Ltd.

ALTHOUGH you will not find any fish tanks carrying the label "Xotic Pets Ltd." in any shop, there is a fair chance that, if you are a marine hobbyist, you will have at least one Xotic specimen in your home aquarium at one time or other.

Xotic Pets Ltd. was established nearly eighteen months ago by John and Jane Tarbatt in a purpose-built warehouse in Alfreton, Derbyshire. Already, they have built the business up, with the help of Manager Jon Coote and Assistant Manager David Baker, into one of the largest importers and wholesalers of quality marine fish and invertebrates in the U.K.

Superlatives are used so flippantly and so often that they tend to become devalued, yet, it is impossible to talk about the Xotic Pets set-up without resorting to the use of superlatives—all of which are fully justified.

For a start, they have installed a customer service system which may well be unique. It is based on four separate systems, two for fish and two for invertebrates with a total water-holding capacity of 20,000 gallons.

Each system consists of a bottom row of large reservoir troughs followed by several tiers of small, individual, acrylic containers and a top row of substantial glass aquaria for shoaling species. All three "units" receive a regular 24-hour-a-day trickle of treated, filtered, balanced water which then passes out via specially constructed overflows back to a central system for recirculation. Prior to recirculation, though, the water is passed through a sophisticated system consisting of sand filters, cartridge filters, foam sponge filters, Ultra-violet sterilizers and, finally, protein skimmers.

Not surprisingly, the specimens (numbering many thousands) are in incredibly good condition. There was not even the slightest hint of disease or stress to be seen anywhere during our visit. This, as anyone familiar with the keeping of large collections will tell you, is, to put it mildly, exceptional.

Yet, it is not only this aspect of Xotic Pets that shows originality. The small acrylic containers mentioned above, contain, for the most part,

single specimens. However, confinement is apparent rather than real, for each specimen receives a constant supply of treated water from the central system and is, therefore, part of a 5,000 gallon "single aquarium" with all its obvious advantages and none of those disadvantages associated with small aquaria.

The final "coup de grâce" involves the method used in serving the fish and invertebrates to visiting customers (largely retailers). The design and size of the acrylic containers allows clients to walk round and inspect the specimens at close quarters. Having done so, they then choose their specimens simply by removing the container from its shelf and loading it on to a trolley which they then take to the "Check-out" area. Here the contents of the clearly priced containers are poured directly into a bag with oxygen and packed in the normal way. At no stage in the process is the specimen netted. This is considered a significant advantage in that minimal stress is caused and considerable time saved all round. The empty container is then topped up, restocked from one of the reservoir troughs and replaced in its proper slot.



Close-up of part of one of the Fish Systems showing shoaling tanks (top), acrylic tanks (middle) and reservoir (bottom) troughs



Feeding time at Xotic Pets Ltd.

A little-mentioned, but fundamentally important aspect of the fish business—de-bagging—has also come under close scrutiny at Xotic Pets. By now, it will not come as a surprise to readers to learn that the "Xotic way" of de-bagging is different.

The usual method is for bags to be opened in subdued light and then floated in a large tank for temperature equilibration to take place. After a short time, a little mature water is allowed into the bag to get the specimens gradually used to the new water chemistry. This may be done a few times prior to the final release of the specimens into the holding tank.

At Xotic Pets, the specimens are de-bagged in subdued light directly into dark-coloured plastic bowls which have a row of overflow holes running parallel to the rim but about one inch below it. Each bowl is then placed under a trickle of water, as per the systems described above, and left overnight. By morning, all the water has been changed, but in a very gradual, controlled way which, again, keeps stress to an absolute minimum. The specimens are next transferred to the reservoir troughs for further conditioning before being offered for sale.

In Jon Coote, the Company has a well-known and respected authority in the world of herpetology. On

meeting Jon, a great warmth and love for these animals becomes immediately apparent. This affinity for reptiles is, therefore, put to proper use and Xotic Pets can always boast a large selection of healthy snakes, terrapins (turtles in American literature), tortoises and lizards available for inspection.

During our discussions, it emerged that the Company is currently involved in the captive breeding of endangered species of reptiles, a fact that struck

a particularly strong chord with our Consultant Editor. What makes this aspect of the work even more worthy of note is that, despite the pressures of the commercial world, Xotic Pets are breeding these lizards (notably Lilford's Wall Lizard, *Podarcis lilfordii lilfordii*, from a Menorcan rock island, and a very closely related subspecies) from stocks which, themselves, have been bred in captivity. In other words, no collecting from the wild is involved; on the contrary, serious attempts are being made by the Company, under Jon's management, to increase existing stocks. We obviously, applaud such efforts and wish Jon the very best of luck.

Above the livestock area, there is a large well-laid-out area displaying an extensive selection of dry goods, from food to aquaria, and including a very impressive library of fish, invertebrate, amphibian and reptile books. Whilst the three main areas of wholesale trading are marines, reptiles and dry goods, Xotic Pets also offer a specialised service for their tropical fish customers.

Next time you go into a shop to buy marines or reptiles, it might be well worth your while asking your retailer as to the source of the specimens. If the response is "Xotic Pets", you now know where they have come from and how much care has been dedicated to their well-being.



This is *Podarcis lilfordii lilfordii*, Lilford's Wall Lizard, one of the endangered species being bred at Xotic Pets Ltd.

Meet the Societies



BANGOR AQUARISTS BREEDERS SOCIETY



The B.A.B.S. Logo



THIS month we are delighted to feature our first Society from Northern Ireland, Bangor Aquarists Breeders Society. We look forward to receiving similar information from other such Societies and thank B.A.B.S. for contacting us.

B.A.B.S. was formed in 1952 by a group of aquarists from Bangor whose main interest was the breeding of fish. Consequently, the word "Breeders" was incorporated into the Society's name to serve as a constant reminder of the founders' aims.

This emphasis on the *breeding* aspects of fishkeeping receives regular encouragement via the Breeders' Award Scheme introduced several years ago. There are three categories within the scheme, i.e. Bronze, Silver and Gold, each reflecting a particular level of difficulty. Points are awarded for the degree of difficulty of spawning different species and, very significantly, for the quality of the resulting fry. Since only two spawnings of any single species are allowed, this encourages members to widen their horizons. There is no easy way out of this, colour varieties, quite rightly, counting as one species only.

A real measure of the high standards demanded by the Breeders' Award Scheme can be obtained from the statistic that, so far, only one member has achieved the Gold Award.

Perhaps the major single event in the B.A.B.S. calendar is the annual Open Show, which is the most recently established one of its kind in Northern Ireland. Despite its lack of history, it nevertheless attracts between 300-400 entries (some established Open Shows would be proud to receive as many entries as this).

In addition to the Show, B.A.B.S. run a varied and interesting programme of activities including DIY sessions, quizzes, lectures by visiting speakers from the University, slide shows, Table Shows, auctions of fish and equipment every Christmas, discussions on overseas trips made by members and "official" club outings ranging from bus runs for the whole family, to deep-sea fishing trips and informal livefood collecting trips.

B.A.B.S. meet on the second Tuesday of every month at 8.00 p.m. in the Royal Hotel, Bangor—everyone is welcome.

Subscription Rates:—

Adults £5.00. Juniors £1.00.

Apply to:—Mr. R. Savage (Secretary), 22 Ardmillan Crescent, Newtownards, Northern Ireland.

NORTHERN GOLDFISH AND PONDKEEPERS SOCIETY



The N.G.P.S. Logo



Carassius auratus

THE N.G.P.S. was founded in 1959 by a group of coldwater enthusiasts from Manchester. It says a lot for this Society that some of those founder members still play their part in present-day activities. Although originally all the members came from the area around Manchester, today, they come from much wider afield, including London, Birmingham, Boston (Lincs.), Bradford, Huddersfield, Ossett, Macclesfield, Blackpool and Southport.

N.G.P.S. train their own judges, and excellent ones at that. No doubt, this is largely due to the very strict rules concerning nominees who wish to train. Candidates must have at least ten years' experience of keeping and breeding Goldfish, with some breeding success in at least two varieties. If this seems a bit tough, N.G.P.S. justify their entry qualifications by stating the belief that such conditions are necessary for any judge to do his/her job competently, maintaining extremely high standards of fish and, thus, benefiting both competitors and the hobby as a whole.

Every year in August, there is an Open Show which attracts entries from all around the country. This year's (1983) Show was the 7th in the Society's history. There were 30 Classes for Fancy Goldfish with pride of place among these going to the Breeders Classes, the Best Breeders team of four fish winning the much coveted Aquarian Trophy.

All fish are judged according to N.G.P.S. Standards, first published in 1980 after many years of painstaking work by a group of Goldfish experts from within the Society. Again, in keeping with the overall fight for excellence that characterises so many of the Society's undertakings, these Standards set up high ideals for members to aim at.

Meetings are held on the second Tuesday of every month at the Sports Centre, Silverwell Street, Bolton, starting at 7.30 p.m. Publications include a monthly Newsletter compiled by the Secretary. In it, details are given of meetings, news and views, and advertisements for fish, plants and equipment. In addition, a Standards Book and a series of Information Booklets are also available.

Subscription Rates:—

Single Membership £5.00. Family Membership £6.00 O.A.P. and Junior Membership £3.00.

Apply to:—Mrs. Pauline Hodgkinson (Secretary), 9 Stratford Close, Farnworth, Bolton, Lancashire.



of the Aquarium

Q₁₀

WITHIN limits, rates of reaction increase with rising temperature. This 'rule' applies to physical, chemical and biological reactions and, as such, is of direct relevance to aquatic organisms. Q₁₀ is referred to as a temperature co-efficient and is a measure of the rate of increase in a reaction or process produced by a temperature rise of 10°C. It is not an absolute figure that can be checked against a standard scale, though. It is, rather, a relative one which relates the rate of reaction at a particular temperature for a particular organism with the rate for the same organism at a temperature 10°C lower.

Therefore, if a process in, say, a Goldfish has a Q₁₀ value of 2 at 20°C,

this means that the rate at which that process occurs is twice as fast at 20°C than at 10°C.

For physical processes, the figure is often less than 1.5; for chemical and biological ones, it is often between 2 and 3. However, some reactions have much higher values. Particularly high Q₁₀ values are obtained for reactions such as the clotting of proteins, like egg albumen (635), and for haemoglobin, the oxygen-carrying pigment found in blood (13.8).

When these principles are applied to aquatic organisms, the reasons for death or distress with increasing temperature become a little clearer.

For example, bacteria (both 'good' and 'bad'), react very quickly to any temperature change—certainly much faster than fish can. Therefore, a temperature rise will be accompanied by a marked increase in the bacterial

population and its demand for oxygen.

The slower rate of reaction exhibited by fish means that they can find themselves in a hostile environment without properly functioning defences. Their problems are further accentuated by the decreased concentration of dissolved oxygen that accompanies a rise in temperature, irrespective of the presence or absence of bacteria.

During hot spells, things are taken even a stage further as the Q₁₀ for the fish rises dramatically in an ever-reducing oxygen concentration. Cold-water enthusiasts are particularly familiar with the sad consequences of this in spring and high summer, despite the ability of their fish to adapt to a range of gradual environmental changes.



Coldwater fish, such as Gudgeon, suffer at high temperatures

Rainbowfishes

THE two most common Rainbowfishes within the aquarium hobby are those belonging to the genera *Melanotaenia* from Australia and *Bedotia* from the Malagasy.

This superficially simple split, however, hides a complex and potentially confusing state of affairs.

According to Gosline, Rainbowfishes are closely related to the members of the Mugiloidae, a Suborder which includes the Mulletts. They, in turn, are placed within the Order Perciformes (the Perchlike fishes). According to some aquarium books which accept this classification, *Bedotia* and *Melanotaenia* both belong to the family Atherinidae which itself is subdivided into the Atherininae and the Nannatherininae, the former having two separate dorsal fins while the latter only had a single long-based one.

In addition, there is a strong body

of scientific opinion, supported by Nelson, Greenwood, Rosen and other prominent authorities, that places the Rainbowfishes in the order Atheriniformes, thus separating them from the Perciformes.

This last classification is the one adopted here, in keeping with other similar issues so far tackled in this series.

According to Nelson, *Melanotaenia* and *Bedotia* are sufficiently different to warrant their separation into two families. One of the major deciding factors is the total lack of a lateral line in *Bedotia* and its closest relatives. In the *Melanotaeniidae*, the only well-known aquarium species are those



Telmatherina ladigesii, the Celebes Rainbow

belonging to the genus *Melanotaenia*. These include the Australian Rainbow (*M. nigra*) and the Dwarf Australian Rainbow (*M. maccullochi*). The Atherinidae (Silversides) include *Bedotia geayi* (the Madagascar Rainbow), *Telmatherina ladigesii* (the Celebes Rainbow) and *Pseudomugil gettrudae* (Gettrude's Blue-Eye).

Another member of the Atherinidae is the fascinating Grunion (*Lewisthes tenuis*). This remarkable fish spawns at night during periods of very high tides, usually between March and August. Spawning swarms contain countless individuals which come on to the beaches of Lower California with the waves and remain stranded long enough for the females to burrow tail-first into the sand. They are then encircled by the males and mating takes place. The fish then return to the sea and the eggs are left to hatch with the next high tide.

The *Melanotaeniidae* are predominantly freshwater while the Atherinidae, despite the popular aquarium species, are largely marine.

Quasi-female Colouration

This term was used by Dawes (Sch. Sc. Rev., Vol. 56, No. 196, 522-533, 1975) in referring to the colouration of submissive males of the Giant Gourami, *Colisa fasciata*, in the presence of a dominant male.

The development of the colouration was recorded as part of a series of experiments in which three adult males were allowed to compete for a spawning site and a single ripe female.

The experimental tank measured 24 in. x 12 in. x 12 in. with the surface divided into two equal halves, one heavily covered with Lesser Duckweed (*Lemma minor*) and the other totally devoid of vegetation. Numerous shelters were provided in the form of thick clumps of submerged vegetation, rocks and slates. All four fish were introduced simultaneously to avoid any possibility of differential advantage, other than size and sex.

(Male 1 measured 8.7 cm, male 2—7.9 cm, male 3—7.6 cm, and the female—7.5 cm).

Overnight, all three males adopted full breeding colours and started displaying vigorously at each other. The accompanying table is a quantitative summary of a series of 15-minute observation periods in which the frequency of these displays was recorded.

Table	♂♂	♂♂	♂♂	♂♂	♂♂	♂♂
Time	1/2	1/3	2/1	2/3	3/1	3/2
00 hours	0	0	0	0	0	0
06 hours	4	6	5	7	4	1
15 hours	15	11	13	13	8	12
24 hours	13	4	14	1	0	0
29 hours	3	1	1	1	0	0



Dominant male with bright colours and extended fins

As can be seen from these figures, the male initiating the lowest number of displays is Male 3. He was later followed by Male 2, leaving Male 1 in charge. As each male submitted, his colouration faded significantly until it closely resembled that of the female. This went even as far as the dark, diffuse post-opercular and caudal peduncular patches.

As this colouration developed, the number of open attacks received went down markedly. Quasi-female colouration may, therefore, help to convey the message of submission and confer a degree of protection which would not otherwise exist. This could be of survival value both to the individual and the species as a whole.



Submissive male with folded fins, pale colours and quasi-female patches

Rockfishes

The Rockfishes, also known as the Scorpionfishes, include the most poisonous fish known to science. All are marine and are widespread in tropical and temperate seas.

As with many other 'groups', different authorities classify the Rockfishes differently. For example, according to some workers, the Stonefishes should be included in the same family, the Scorpaenidae. Such a classification would include one of the most interesting genera, *Misoua*, in which the body is almost completely covered with a colony of living hydroids (organisms related to *Hydra*). The hydroids themselves have never been found on their own. According to other classifications, including those of Greenwood (and others) and Nelson, *Misoua* and its closest relatives form a separate family, the Synanceiidae. The Rockfishes are given family status on their own and are referred to as the Scorpaenidae.

Despite this apparent restriction, there are still about 60 genera of Rockfishes with around 330 species in total.

Not surprisingly, there are differences of sufficient magnitude within the general area of shared characteristics, such as the common occurrence of ovoviviparity (livebearing), to warrant subdivision into a number of sub-families. Nelson gives the following provisional list which will, no doubt, be revised as new significant data come to light: Apistinae, Pteroidichthyinae, Pteroinae, Scorpaenae, Sebastolobinae, Sebastinae, Setarchinae, and Tetraroginae.



Scorpaena species are common in the Mediterranean

Of these, the most important as far as aquarium species are concerned are the Pteroinae and (to a lesser

extent) the Scorpaenae, the latter probably being familiar to many visitors to the Mediterranean.



The toxicity of the poison produced by *Pterois volitans* can be lowered by very hot water. Photo Courtesy of Aquarian

Among the Pteroinae, the Lionfish, Dragonfish, Turkeyfish or Butterfly Cod (*Pterois volitans*), is the best-known species. It is, without doubt, a beautiful but potentially dangerous fish. Fortunately for the aquarist, *P. volitans*, and the other species in the genus, are extremely inoffensive. Injuries occur only rarely from the stiff poisonous spines of the dorsal fin and, when they do, are usually the result of carelessness on the part of the aquarist.

CARING FOR LARGER



Rudd and roach—note the characteristic upturned mouth of the former. Rudd tend to do better in aquaria than roach

JUDGING from my mail bag, something which is attracting a considerable amount of attention at the moment is the keeping of large tropical or cold-water fish (including native 'coarse' fish species) in home aquaria. Fish such as oscars and other large cichlids fall into this category as well as large fancy goldfish and koi and fish such as roach, bream, carp, etc.

Tank size

Fish such as this obviously require a large tank, and I would suggest that a 36 × 12 × 15 inch aquarium should

AQUARIUM FISH

by Chris Andrews

be looked upon as a minimum. A tank of this size will house a pair of 8-10 inch oscars or a similar number of other similar-sized fish (see below for details).

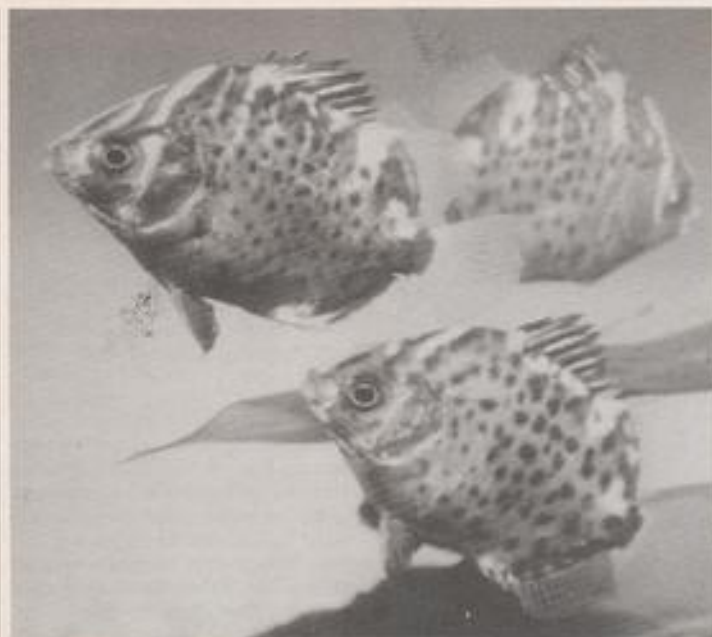
An important point to remember when dealing with large aquaria is that each cubic foot of water is equivalent to over six gallons and weighs sixty pounds. The weight of gravel and rocks is, of course, extra to this. Therefore a 36 × 12 × 15 inch tank (when set-up) will weigh about 300 pounds. What this all means is that all aquaria (but especially large ones) must be sited on a firm, even base that is capable of supporting the weight. Polystyrene ceiling tiles, cut to the size of the tank bottom, will even out any irregularities in the base support.

Hobbyists may also find that when dealing with larger fish it is useful to have a reasonable amount of space above the tank for tank maintenance, catching the fish, etc. Consequently, shelves and the like should not be sited too near the tank hood.

Naturally no aquarium should be sited next to room heaters or in direct sunlight, both of which may cause dangerous fluctuations in tank temperature.

Decor

The tank is best set-up along fairly simple lines, to facilitate cleaning and optimise swimming space for active fish. All that is needed is a covering of well-washed gravel on the tank floor and a number of smooth-edged rocks and/or pieces of bogwood. The decorations should be sufficiently large so that the fish cannot dislodge them and



Seals grow quite large (up to 25cm), and when fully grown need a certain amount of salt in the water

(of course) smaller, less stable rocks can be 'glued' together using aquarium sealant.

Rocks such as limestone and chalk are best avoided since they may raise the pH and hardness to an unacceptable level. Sandstone, granite and slate are usually ideal for fish tanks. Bogwood can discolour the water if it has not been properly treated but this can be avoided if the bogwood is first given three or four coats of polyurethane varnish, allowing each coat to dry completely before applying the next. When completed, the varnished bogwood should then be well washed in running water before it is used in the aquarium. Bogwood can be prevented from floating by cementing it to a piece of slate with aquarium sealant.

Plants do not usually do well in this type of tank and hence plastic equivalents are a possibility. Alternatively some of the tougher leaved plants may be planted in pots and placed in the tank. The pots will have to be stable, with a layer of gravel over the rooting medium to stop the fish disturbing it too much.

Heating and lighting

Coldwater fish will not require a heater-thermostat and probably do best at 15-20°C. Try to avoid very warm temperatures with these fish.

In a tropical aquarium a reliable heater-thermostat should be used to maintain a stable temperature around 25°C. As a rough guide a 36 x 12 x 15 inch tank will require a 100 watt heater-thermostat, whilst a 72 x 18 x 18 inch tank will probably require two 150 watt heater-thermostats. Since some large, active fish have been known to damage heater-thermostats, they can be sited behind a rock decoration, using an airstone to ensure adequate circulation of the water.

The temperature of the water should be regularly checked using a reliable thermometer. Unless it is intended to grow plants in the aquarium, lighting will only be required to admire the fish. Consequently one white light fluorescent tube (approximately the same length as the tank) will suffice, and this can be turned on for a few hours each day. Fluorescent lights are preferred to ordinary light bulbs for several reasons. In the long-run they are cheaper to run, they do not add unwanted heat to the aquarium and

they are less likely to break if water is splashed onto them while they are switched on.

If plants are to be grown in the aquarium, approximately 15 watts of white fluorescent light per foot length of aquarium will be needed, and this will have to be left on for about 8-10 hours each day.

Naturally large, nervous fish should not be startled by turning the aquarium lights on or off in an already darkened room. If the room is dark, always turn a room light on before turning the tank lights on, and always turn the tank lights off before turning the room lights off.

Filtration and aeration

Whilst filtration via a poly-foam cartridge filter is ideal for most aquaria, large tanks containing large fish are best filtered by a good quality power filter. Choose a model that will turn the volume of the tank over several times in a 24 hour period. If a spray arm is available, then additional aeration probably is not necessary. Otherwise, aeration should be provided by one or two airstones and a suitable air pump.

The power filter should be left running for at least 20 hours per day. Some models come with their own media. Otherwise a good layer of filter wool and a second layer of well washed aquarium gravel will suffice. The water must pass through the wool first, then the gravel.

About once every two weeks the wool should be removed and replaced with fresh, and about once every eight weeks the gravel should be rinsed in luke warm water. To maintain the biological activity of the gravel, about a teacup-full of the 'dirty' gravel should be left unwashed and used to 'seed' the clean, washed gravel.

Feeding

Like all other aquarium fish, large aquarium fish should be fed 2-4 times per day, but only with sufficient food that is eaten in three or four minutes. Many people who keep large fish often overlook the excellent prepared foods that are available and tend to feed their fish on a mix of household foods and scraps. This is obviously undesirable



A luxuriant growth of plants such as this will not be possible in a tank containing large, active fish

and can lead to tank pollution and nutritional problems for the fish.

Certain flaked foods are available in a large flake form for larger fish and there are also tablet and pelleted foods. Many large aquarium fish will also thrive on a staple diet of *DoroMin* foodsticks which are now available from most aquarium shops. Earthworms are an excellent live food for large aquarium fish, and these (along with frozen foods) may be used to

tempt fussy feeders onto a more suitable diet of prepared foods. The use of many live foods of aquatic origin brings with it the inherent risk of introducing disease organisms or other pests to the tank.

Variety is, of course, important and today's aquarists are fortunate that they have such an array of excellent prepared fish diets to choose from. Naturally it is best to choose a brand which you are familiar with and upon which you can rely for quality and availability. Large fish (oscar is an excellent example) really do become 'pets' and

soon learn to take food from the aquarist's fingers!

Tank maintenance

Some items of tank maintenance have already been mentioned. However, it is probably worth emphasising the importance of regular filter maintenance since without it power filters (and most other filters) simply will not function properly.

In addition to regular filter maintenance, once every four weeks or so, any algae should be scraped from the tank sides, the gravel on the floor gently stirred-up with a stick and the tank floor 'hoovered' with a siphon tube. At the same time about 25% of the tank water should be removed, and the tank topped up with clean water conditioned with *AquaSafe* and brought to the correct temperature with a little boiling water from a kettle.

Perhaps once a year the tank will require a more substantial clean out than this. If the tank is stripped down at anytime, try to keep some of the old medium from the filter, and about 25% of the tank water, for when you set the tank up again.

Fish health

Generally speaking, if fish are cared for correctly, they will be resistant to most diseases. Correct feeding and good water quality (the latter of which is maintained by good filtration and regular, partial water changes) are both very important.

Recurring outbreaks of disease (eg. fin rot, fungus) probably indicate that the aquarium is being poorly maintained. Therefore the pH, nitrite content and also the water hardness should be checked using a reliable test kit. The importance of regular filter maintenance and partial water changes has been mentioned. A treatment of the tank with a broad spectrum 'fish tonic' (eg. *General Tonic*) may be a good idea, while the aquarist investigates the underlying cause of the problem.

For further information (and free literature) on any aspect of fishkeeping, write to Dr Christopher Andrews at the Tetra Information Centre, 15 Newlay Lane Place, Leeds LS13 2BB.

NEWS...

SOUTH WEST



FISH ailments and their treatment were discussed with Bristol A.S. by Terry Harper and Wally Perkins. Using charts Terry showed us a formidable list of possible disorders only six remedies as with further charts about the remedies available. Wally Perkins dealt more specifically with the problems as they affect Koi.

Among the exhibits in the Table Show on 9th October, were some young Veilfish bred by Jim Day that were showing remarkable growth. The interesting thing about the exhibit was the fact that their parents were only five months old and had taken prizes for fish bred this year at the recent Bristol Show. I think that this is the first time that I have seen two generations of Veilfish bred in less than six months. Perhaps the long warm spell had something to do in helping Jim in this remarkable feat.

Table Show results: Blonst Fish: J. Day, Biggest Baby bred 1983: J. Day, Oriental, Pom-pom, Bubble-eye: 1 and 3, S. Howell; 2 and 4, P. Peard. Bristol Showbunkers bred 1983: 1 and 2, D. S. Paul; 3, S. Lloyd; 4, W. Loonand.

AT the a.g.m. of North Avon A.S. in October, the following officers were elected: Chairman, C. Spence; Vice Chairman, Y. C. Harper; Secretary, R. W. Cummins; Treasurer, Mrs. E. Harper; Programmes Officer, D. Spence; Ordinary Committee member, J. Hughes.

Following the business of the a.g.m., Mr. Harper delivered a very interesting talk on Fish Diseases and Ailments, together with suggestions of both branded and unbranded cures.

The Society is ever increasingly alert to difficulties that the aquarist is likely to encounter, by aquarists, we include anyone who keeps fish, from one kept generally as a pet, to the specialist, through to the breeder with numerous numbers and varieties.

No distinctions are made, and everyone is welcome at our meetings. Why not come and join us? We meet at Hatham Folk Centre, High Street, Hatham, Bristol on the third Monday in each month, commencing at 7.30 p.m. Please note, our December meeting will be one week earlier to avoid Christmas week, and will take place on 12th December. Any enquiries should be sent to the Secretary, Mr. R. W. Cummins, 1 St. James' Close, Gableway Heath, Wansley, Bristol BS15 5BH.

Tongham Aquarists' club table show was held at the Victoria Hall, Ash on 6th October. Exhibitors: 1, G. Horton (*Myxus macrodonatus*); 2, R. Cooke, *Pseudomolax rufus rufus*; 3, K. Perrin, *Pomolax pictus*; 4, S. Baines, *Pomolax Bonus* and *Loachet*; 1, G. Horton, *Betta taeniata*, A.O.V. Livebearers: 1, R. Cooke, *Brachyphaps erythroptera*; 2, M. Bland, *Atherinichthys affinis*; 3, B. Cooke, *Chapuisi-Atley parvulus*; 4, R. Cooke, *Brachyphaps erythroptera*. A.O.V.: 1, R. Cooke, *Pseudoraphis minus*; 2, N. Minnick, *Tilapia hutchingsi*; 3, G. Horton, *Corydoras melanostomus*; 4, G. Horton, *Labeo bicolor*. Judge: P. Meyer.

Speaker for the evening was Ian McGilroy who gave an interesting talk with slides on keeping and breeding *Corydoras*.

8th October: Knock-out: 1, N. Minnick, *Tilapia hutchingsi*; 2, P. Hardy, *Acanthopoma thalassia*; 3, K. Perrin, *Pomolax pictus*.

From Aquarists' Societies

A.O.V.: 1, C. Pearce, Singlefin goldfish; 2, L. Martin, *Rhodeus auratus*; 3, K. Perrin, *Pomolax pictus*; 4, R. Knott, *Pomolax pictus*. Judge: Derek Lambert.
A talk was given by Mark Mitchell about Marine Aquaria.

SOUTH EAST



RESULTS of the Beesleyheath & District A.S. open show held on 16th October at Erith Road, Beesleyheath, Kent. Class Ag: 1, P. Mills (W.D.A.S.); 2, I. Adams (W.D.A.S.); 3, W. Woodward (B.D.A.S.); 4, A. Waller (Southend); 5, S. Edwards (E.K.A.S.G.); 6, P. Whiddett (Tonbridge); 7, E. Dixon (B.D.A.S.).

Class B: 1, E. Dixon (B.D.A.S.); 2, R. Scouting (Ashford); 3, N. Somers (SELAS); 4, A. Somers (SELAS); 5, J. Edwards (E.K.A.S.G.); 6, Mrs. D. Winder (E.D.A.S.); 7, P. Ratcliffe (Tonbridge); 8, C. Bird (Strood); 9, Mrs. P. Edwards (E.K.A.S.G.); 10, A. Waller (Southend); 11, P. Ratcliffe (Tonbridge); 12, W. Chapman (Corringham); 13, C. Bird (Strood); 14, Mrs. P. Edwards (E.K.A.S.G.); 15, P. Whiddett (Tonbridge); 16, Mrs. P. Edwards (E.K.A.S.G.); 17, J. Taylor (Tonbridge); 18, D. Winder (E.D.A.S.); 19, R. Scouting (Ashford); 20, C. Smith (B.D.A.S.); 21, R. Somers (SELAS); 22, J. Kay (Southend); 23, E. Dixon (B.D.A.S.); 24, R. Somers (SELAS); 25, P. Lagon (SELAS); 26, W. Chapman (Corringham); 27, M. Fraser (Tonbridge); 28, E. Lock (E.D.A.S.); 29, M. Drooper (Tonbridge); 30, C. and D. Bridgeman (E.K.A.S.G.); 31, E. Dixon (B.D.A.S.); 32, J. Edwards (E.K.A.S.G.); 33, R. Somers (SELAS); 34, D. Winder (E.D.A.S.); 35, I. R. Mitchell (B.D.A.S.); 36, T. Laughlan (Hastings); 37, R. Scouting (Ashford); 38, Miss J. Smith (Jr.) (E.D.A.S.); 39, J. and 2, C. Cherrington (Southend); 40, P. Amos (Jr.) (E.D.A.S.); 41, C. Cherrington (Southend); 42, R. Somers (SELAS); 43, D. Winder (E.D.A.S.); 44, D. Wright (Hastings); 45, Mrs. P. Edwards (E.K.A.S.G.); 46, G. Lywood (E.D.A.S.); 47, N. Staines (Ashford); 48, R. Somers (E.K.A.S.G.); 49, I. W. Hastings (SELAS); 50, P. Ratcliffe (Tonbridge); 51, D. Wright (Hastings); 52, Mrs. J. Maudie (B.D.A.S.); 53, I. J. Rowney (B.D.A.S.); 54, W. Hastings (SELAS); 55, D. Winder (E.D.A.S.); 56, G. Hicks (B.D.A.S.); 57, P. Ratcliffe (Tonbridge); 58, F. English (E.D.A.S.); 59, Joanna Rees (E.D.A.S.); 60, E. Dixon (B.D.A.S.); 61, L. Adams (W.D.A.S.); 62, R. Somers (SELAS); 63, C. and D. Bridgeman (E.K.A.S.G.); 64, P. Mills (W.D.A.S.); 65, L. J. Edwards (E.K.A.S.G.); 66, D. Winder (E.D.A.S.); 67, A. Dempsey (Hastings); 68, C. and D. Bridgeman (E.K.A.S.G.); 69, L. J. and 2, J. Draper (Tonbridge); 70, J. Edwards (E.K.A.S.G.); 71, R. Scouting (Ashford); 72, G. Hicks (B.D.A.S.); 73, J. Smith (Jr.) (E.D.A.S.); 74, J. Amos (B.D.A.S.); 75, M. J. W. Hastings (SELAS); 76, R. Somers (SELAS); 77, J. Rowney (B.D.A.S.); 78, G. Hicks (B.D.A.S.); 79, D. Winder (E.D.A.S.); 80, J. E. Dixon (B.D.A.S.); 81, P. Lagon (SELAS); 82, Mrs. P. Edwards (E.K.A.S.G.); 83, W. Chapman (Corringham); 84, R. Scouting (Ashford); 85, J. P. Mills (W.D.A.S.); 86, R. Somers (SELAS); 87, C. Cherrington (Southend); 88, C. and D. Bridgeman (E.K.A.S.G.); 89, O. J. B. Lock (E.D.A.S.); 90, B. Brett (B.D.A.S.); 91, L. Adams (W.D.A.S.); 92, T. Laughlan (Hastings); 93, R. Somers (SELAS); 94, G. Coombes (SELAS); 95, P. Lagon (SELAS); 96, E. Lock (E.D.A.S.); 97, J. E. Dixon (B.D.A.S.); 98, Miss J. Smith (Jr.) (E.D.A.S.); 99, C. and D. Bridgeman (E.K.A.S.G.); 100, P. Lagon (SELAS); 101, A. Somers (Jr.) (SELAS); 102, J. Amos (B.D.A.S.); 103, P. Edwards (E.K.A.S.G.); 104, R. Scouting (Ashford); 105, J. E. Dixon (B.D.A.S.); 106, J. Rowney (B.D.A.S.); 107, P. Edwards (E.K.A.S.G.); 108, A. Waller (Southend); 109, L. J. and 2, C. Cherrington (Southend); 110, W. Hastings (SELAS); 111, J. W. Woodward (B.D.A.S.); 112, R. Scouting (Ashford); 113, P. Mills (W.D.A.S.); 114, P. Whiddett (Tonbridge); 115, V. I. A. Somers (Jr.) (SELAS); 116, J. and 2, W. Woodward (B.D.A.S.); 117, T. Laughlan (Hastings); 118, W. J. W. Woodward (B.D.A.S.); 119, J. and 4, J. Taylor (Hastings); 120, W. Woodward (B.D.A.S.); 121, E. Dixon (B.D.A.S.); 122, J. Edwards (E.K.A.S.G.); 123, C. Cherrington (Southend); 124, A. Waller (Southend); 125, R. Somers (SELAS); 126, J. Rowney (B.D.A.S.); 127, I. A. Waller (Southend); 128, C. Cherrington (Southend); 129, P. Mills (W.D.A.S.); 130, J. Edwards (E.K.A.S.G.); 131, J. Taylor (Hastings); 132, W. Woodward (B.D.A.S.); 133, A. Waller (Southend); 134, C. Cherrington (Southend); 135, J. and 3, P. Mills (W.D.A.S.); 136, J. Taylor (Hastings); 137, C. and D. Bridgeman (E.K.A.S.G.); 138, W. Woodward (B.D.A.S.); 139, K. Holt (Southend); 140, C. Cherrington (Southend).

PHAS Championship, Class W: W. Woodward (B.D.A.S.); Best Fish in Show: Mrs. Pat Edward (E.K.A.S.G.); Highest Pointed Individual: E. Dixon (B.D.A.S.); Highest Visiting Society: SELAS. Total number of entries: 503.

AT the recent meeting of the Association of Aquarists at Aylesbury, the secretary reported that there are now 43 aquatic clubs affiliated plus numerous individual members. A new list of lecturers and judges is now available to their societies. The Association also now has available car stickers, lapel badges, and size guides for all types of show fish. We are currently working on information books which we hope to have available in the New Year.

In conjunction with Thomas's we are running a National Fish Exhibition at Kempton Park in 1984, from 8th-10th June, with assistance from the *Aquarist* and *Pondkeeper Magazines*. Further information regarding the Association can be obtained from the Secretary, Pat Lambourne, Wheeler Court, Plough Road, London SW11 2AX.

Monthly reports from Secretaries of aquarists societies for inclusion on this page should reach the Editor by 3rd of the month preceding the month of publication.

J. E. Dixon (B.D.A.S.); 2, Miss J. Smith (Jr.) (E.D.A.S.); 3, C. and D. Bridgeman (E.K.A.S.G.); 4, P. Lagon (SELAS); 5, A. Somers (Jr.) (SELAS); 6, J. Amos (B.D.A.S.); 7, P. Edwards (E.K.A.S.G.); 8, R. Scouting (Ashford); 9, J. E. Dixon (B.D.A.S.); 10, J. Rowney (B.D.A.S.); 11, P. Edwards (E.K.A.S.G.); 12, A. Waller (Southend); 13, L. J. and 2, C. Cherrington (Southend); 14, W. Hastings (SELAS); 15, J. W. Woodward (B.D.A.S.); 16, R. Scouting (Ashford); 17, P. Mills (W.D.A.S.); 18, P. Whiddett (Tonbridge); 19, V. I. A. Somers (Jr.) (SELAS); 20, J. and 2, W. Woodward (B.D.A.S.); 21, T. Laughlan (Hastings); 22, W. J. W. Woodward (B.D.A.S.); 23, J. and 4, J. Taylor (Hastings); 24, W. Woodward (B.D.A.S.); 25, E. Dixon (B.D.A.S.); 26, J. Edwards (E.K.A.S.G.); 27, C. Cherrington (Southend); 28, A. Waller (Southend); 29, R. Somers (SELAS); 30, J. Rowney (B.D.A.S.); 31, I. A. Waller (Southend); 32, C. Cherrington (Southend); 33, P. Mills (W.D.A.S.); 34, J. Edwards (E.K.A.S.G.); 35, J. Taylor (Hastings); 36, W. Woodward (B.D.A.S.); 37, A. Waller (Southend); 38, I. C. and D. Bridgeman (E.K.A.S.G.); 39, W. Woodward (B.D.A.S.); 40, K. Holt (Southend); 41, C. Cherrington (Southend).

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MIDLANDS AND WALES



RECENT changes have taken place at Kettering Tropical Fish Club following their a.g.m. Due to long standing Chairman, Roger Vickers retiring because of personal reasons, the committee has been reorganised. The main positions and new members are listed below: Chairman, Anthony Irons, 10 Jean Road, Kettering; Secretary, Peter Bradley, 10 Jean Road, Kettering; Show Secretary, Chris Wright, Ashtree Cottage, Church Street, Woodford; Treasurer, Sheila Stanforth, 79 Penzance Way, Kettering; Vice-Chairman, Mick Such, 8 Cherry Tree Close, Desborough. Other members include: Harry Cragg, Russell Stanforth, Nick Craddock, Avril Oakes and Martin Wright.

It has also been decided that the annual open show is to take place on 15th April, but as yet no details have been finalised.

Wolverhampton A.S. meet on the 1st Saturday of each month at the Odey & Fordhouses Community Centre, Mans' Lane, Wolverhampton. Table shows are held at every meeting in order to cover all the fish classes throughout the year. These are supplemented by slide and film shows, lectures, quizzes, and visits. For further information tel: Wolverhampton 750144.

Our open show results were as follows (subject to Association of aquarist rules):

Furnished Aquaria: 1, R. Potts (CMCG); 2, Chell Family (W'ham); 3, R. and M. Hall (CMCG); 4, D. Eynon (Willeshall). **Barbs (up to 75mm):** 1, Whitehouse Family (W'ham); 2, J. T. and F. Mayle (Nuneaton); 3, A. and R. Potts (CMCG); 4, R. Smith (Leicester). **Barbs (80mm and over):** 1, M. Kirkham (CMCG); 2, G. Crumpton (Halesowen Central); 3, C. Cook (W'ham); 4, Mr. and Mrs. N. Griffiths (Ind.). **Characins:** 1, E. Black (Leamington); 2, T. Steele (BDAS); 3, Mr. and Mrs. Griffiths (Ind.); 4, J. Richards (Leicester). **Hypoclinemys:** 1, R. Smith (Leicester); 2, D. Lomas (Willeshall); 3, J. Richards (Leicester); 4, F. Johnson (Dudley). **Nanostomus:** 1, R.D.S. (Ind.); 2, W. Phazey (Willeshall); 3, M. Kirkham (CMCG); 4, A. and R. Potts (CMCG). **Cichlids:** 1, P. Gilman (Leamington); 2, R. and M. E. Hall (CMCG); 3, T. Steele (Bradwell); 4, C. Hodgkinson (MTA). **Rift Valley Cichlids:** 1, P. Crumpton (Halesowen); 2 and 4, P. Ebor (Willeshall); 3, P. and N. Warr (Droitwich). **Rams, etc.:** 1 and 4, J. and J. Winter (Willeshall); 2, J. T. and F. Mayle (Nuneaton); 3, P. Johnson (Dudley). **Angels:** 1, D. Eynon (Willeshall); 2, Mr. and Mrs. L. Perks (Malvern); 3, J. and J. Davies (Willeshall); 4, L. Laitton (Stafford). **Gouramis:** 1 and 2, P. and N. Warr (Droitwich); 3, P. Johnson (Dudley); 4, Mr. and Mrs. M. Griffiths (Ind.). **Betta Splendens:** 1, D. and J. Bishop (Droitwich); 2, M. Kirkham (CMCG); 3, T. Steele (Bradwell); 4, P. Stoodley (Leamington). **Kribia:** 1 and 3, G. Crumpton (Halesowen); 2, P. Stoodley (Leamington); 4, J. and J. Winter (Willeshall). **Carfish (under 300mm):** 1, S. Burgess (East Leicester); 2, Mr. and Mrs. Perks (Malvern); 3, I. Crockett (CA); 4, C. Hodgkinson (MTA). **Carfish (300mm and over):** 1, P. and N. Warr (Droitwich). **Aplocheilichthys and Corydoras:** 1 and 2, R. James (W'ham); 3, A. White (Willeshall); 4, W. Phazey (Willeshall). **Bochia:** 1, M. Kirkham (CMCG); 2, C. Cook (W'ham); 3, W. Phazey (Willeshall). **Rasbora:** 1, E. Black (Leamington); 2, B. Jones (W'ham); 3, J. T. and F. Mayle (Nuneaton); 4, J. and J. Davies (Willeshall). **Danios and White Clouds:** 1, Mr. and Mrs. M. Griffiths (Ind.); 2, E. Black (Leamington); 3 and 4, A. O. Pinnag (Leicester). **Cobitids and Botias:** 1, R. Smith (Leicester); 2, Chell Family (W'ham); 3, E. Black (Leamington); 4, J. T. and F. Mayle (Nuneaton). **A.O.V. Tropical Egg-layers:** 1, G. Crumpton (Halesowen); 2, J. Burns (W'ham); 3, W. Phazey (Willeshall); 4, G. Eccles (Willeshall). **Labos and Potos:** 1, B. Jones (W'ham); 2, J. T. and F. Mayle (Nuneaton); 3, T. Steele (Bradwell); 4, E. Black (Leamington). **P. reticulata (Male):** 1 and 4, W. Crumpton (Halesowen Central); 2 and 3, P. Gilman (Leamington). **P. reticulata (Female):** 1, W. Crumpton (Halesowen Central); 2, J. and J. Davies (Willeshall); 3, Mr. and Mrs. A. Crumpton (Halesowen Central); 4, A. Davies (Willeshall). **Swordtails:** 1, A. and R. Potts (CMCG); 2, T. Hudson (Halesowen Central); 3, J. Carter (Willeshall); 4, Mr. and Mrs. L. Perks (Malvern). **X. Maculatus and Variatus:** 1, A. Davies (Willeshall); 2, J. and J. Davies (Willeshall); 3, P. Laitton (Stafford); 4, P. Gilman (Leamington). **Brookstone Family (Dudley):** 3, W. Phazey (Willeshall); 4, A. Pinnag (Leicester). **A.O.S. Livebearers:** 1, 3 and 4, J. T. and F. Mayle (Nuneaton); 2, D. Lomas (Willeshall). **Pais (Egg-layers):** 1 and 2, J. Richards (Leicester); 3, M. Kirkham (CMCG); 4, Whitehouse Family (W'ham). **Pais (Livebearers):** 1, J. T. and F. Mayle (Nuneaton); 2, A. Davies (Willeshall); 3, Mr. and Mrs. A. Crumpton (Halesowen Central); 4, P. and N. Warr (Droitwich). **Tropical and Coldwater Egg-layers:** 1 and 4, Chell Family (W'ham); 2, P. Johnson (Dudley); 3, M. Kirkham (CMCG). **Breeders (Livebearers):** 1, 2 and 3, A. Davies (Willeshall); 4, W. Crumpton (Halesowen Central). **Single Tail Goldfish:** 1 and 4, P. Stoodley (Leamington); 2, J. Griffiths (Halesowen Central);

3, C. Johnson (Dudley). **Twinstail Goldfish:** 1 and 3, R. Ansell (Ind.); 2 and 4, C. Sutton (W'ham). **A.O.V. Coldwater:** 1, T. Hudson (Halesowen Central); 2, C. Sutton (W'ham); 3, P. Gilman (Leamington); 4, J. Griffiths (Halesowen Central). **Aquatic Plants:** 1, B. Nail (CMCG); 2, P. Stoodley (Leamington); 3, A. and R. Potts (CMCG); 4, M. Kirkham (CMCG). **Fantails (Egg-layers):** 1, M. Adshard (Willeshall); 2 and 3, S. Grimes (Leamington); 4, J. Davies (Willeshall). **Juniors (Livebearers):** 1, Brookhouse Family (Dudley); 2, J. Grimes (Leamington); 3, D. Valley (Malvern); 4, S. Grimes (Leamington).

Best fish in show was a *Cochlosoma* fests owned by P. Gilman of Leamington. Highest pointed society excluding Wolverhampton was Willeshall A.S. Total number of entries from 17 clubs was 42.

We would like to thank all the judges, exhibitors and non club members who helped with the show to ensure its success.

NORTH



RESULTS of the Statesmen's League match held at Brillington, Scarborough 112 points, Brillington 34 points, Hull 45 points, Wyke 27 points and Ebor 21 points.

The match was judged by the York Aquarist Society.

Guppies: 1, Mrs. J. Baddley (Scar.); 2, G. Andrews (Hull); 3, B. Hagen (Ebor); 4, M. and Mrs. Baddley (Scar.); 5, G. A. Todd (Hull); 6, Mrs. Gray (Scar.); 7, Mrs. B. J. Heppinstall (Castleford); 8, Mr. and Mrs. Baddley (Scar.); 9, G. Nelson (Hull); 10, S. Harrison (Scar.); 11, S. Hassall (Ebor); 12 and 13, S. Taylor (Wyke). **A.O.V. Livebearers:** 1 and 2, G. Andrews (Hull); 3, M. and P. Jordan (Brid.); 4, Mr. W. Sowersby (Scar.); 5, Mr. and Mrs. Ellerker (Scar.). **Large Characins:** 1, K. Webb (Scar.); 2 and 3, P. Taylor (Scar.). **Mex. Dams, Minis:** 1 and 3, A. Rutter (Scar.); 2, S. Harrison (Scar.). **Fighters:** 1 and 2, M. and Mrs. Baddley (Scar.); 3, S. Hassall (Ebor). **A.O.V. Cichlids (up to 100mm):** 1, S. Taylor (Wyke); 2 and 3, Mr. and Mrs. Finby (Wyke). **A.O.V. Cichlids (over 100mm):** 1, M. and P. Jordan (Brid.); 2, M. Eastwood (Ebor); 3, L. Baker (Wyke). **E endemic Rift Lake Cichlids:** 1, Mr. and Mrs. Farand (Brid.); 2, M. and P. Jordan (Brid.); 3, M. Eastwood (Ebor). **Small Anabantids:** 1, M. and P. Jordan (Brid.); 2, E. D. Tyler (Hull); 3, K. Webb (Scar.). **Large Anabantids:** 1 and 2, M. and P. Jordan (Brid.). **Corydoras and Brochis:** 1, W. Sowersby (Scar.); 2 and 3, Mr. and Mrs. Finby (Wyke). **A.O.V. Catfish:** 1, Mr. and Mrs. Baddley (Scar.); 2, S. Harrison (Scar.); 3, M. H. Smith (Hull). **Loaches and Botias:** 1, E. Hoosen (Scar.); 2, S. Harrison (Scar.). **A.V. Aphrocyon:** 1 and 2, T. and J. Garson (Hull); 3, Mrs. S. Sowersby (Scar.). **A.O.V. Killifish:** 1, E. Hoosen (Scar.); 2 and 3, D. Andrews (Wyke). **A.O.V. Tropical:** 1, Mr. and Mrs. Ellerker (Scar.); 2 and 3, K. Webb (Scar.). **Sharks and Fosses:** 1 and 2, E. Hoosen (Scar.); 3, J. Pinnag (Leicester). **Breeder (Egg-layers) A4 and B1:** 1, S. Hassall (Ebor); 2, P. Taylor (Scar.); 3, M. Rugg (Wyke). **Breeder (Egg-layers) C2 and D1:** 1, S. Shields (Ebor); 2, Mr. and Mrs. D. Farand (Brid.). **Breeder (Livebearers) A4 and B1:** 1 and 2, M. and P. Jordan (Livebearer) C2 and D1; 1, 2 and 3, G. Andrews (Hull). **Matched Pairs (Egg-layers):** 1, V. Rugg (Wyke); 2, M. and P. Jordan (Brid.); 3, 1 and J. Garson (Hull). **Matched Pairs (Livebearers):** 1 and 2, M. and P. Jordan (Brid.); 3, T. and J. Douglas (Hull). **Common Goldfish and Comets:** 1 and 3, J. Baddley (Scar.); 2, M. Gray (Hull). **Fancy Coldwater:** 1 and 3, Mrs. S. Sowersby (Scar.); 2, S. Hassall (Ebor). **A.O.V. Coldwater:** 1, Mr. and Mrs.

Ellerker (Scar.); 2, M. and P. Jordan (Brid.); 3, G. A. Todd (Hull). **A.V. Female (Egg-layers):** 1, D. Andrews (Wyke); 2 and 3, K. Webb (Scar.). **Female (Livebearers):** 1, 2 and 3, W. Sowersby (Scar.). **Best in Show:** K. Webb (Scar.). **Judging Society:** York.

RESULTS of the Doncaster & District A.S. open show are as follows: Number of entries: 411.

Best in Show: Mr. and Mrs. Lake (Grimsby and Cleethorpe). **Best Exhibitor:** P. S. Draycott & Sons (A & D). **Guppies:** 1, Mr. and Mrs. Pickford (HCAG); 2, Mr. and Mrs. Riley (GPO); 3, Mr. and Mrs. Thorpe (Doncaster). **Plants:** 1, D. Barratt (BBC); 2, F. S. Draycott & Sons (A & D); 3, Mr. and Mrs. Thorpe (Doncaster). **Mollies:** 1, Mr. and Mrs. Sellers (Ind.); 2 and 3, F. S. Draycott & Sons (A & D). **Swordtails:** 1, Mr. and Mrs. Cuddey (HCAG); 2, Mr. and Mrs. Pickford (HCAG); 3, R. Coleman (Grimsby and Cleethorpe). **Gambusia pascalis:** 1 and 2, F. S. Draycott & Sons (A & D); 3, R. S. Cherry (Holmes). **A.O.V. Livebearers:** 1, Mr. and Mrs. Cuddey (HCAG); 2, G. Barratt (BBC); 3, Mr. and Mrs. Sisk (SJS). **Small Barbs:** 1, Mr. and Mrs. Lloyd (Workshop); 2, Mr. and Mrs. Lammiman (Ashby FK); 3, Mr. and Mrs. Howell (A & D). **Large Barbs:** 1, Mr. and Mrs. Pickford (HCAG); 2 and 3, Mr. and Mrs. C. Curry (York); 4 and 5, Mr. and Mrs. Lake (Grimsby and Cleethorpe). **Large Characins:** 1, Mr. and Mrs. Howell (A & D); 2, Mr. L. Macbeth (Ind.); 3, Mr. and Mrs. Lloyd (Workshop); 4, Mr. S. Sutton (Cudworth); 5, Mr. and Mrs. Howell (A & D); 6, Mr. Catts (Grimsby and Cleethorpe). **Small Cichlids:** 1, S. Taylor (Wyke); 2, Mr. Mitchell (Leicesters); 3, Mr. and Mrs. Brackburn (HCAG); 4, A.O.V. Cichlids; 1, T. Stanfield (SJS); 2, Mr. Soavey (Oley); 3, Mr. and Mrs. Barlow (Mex.). **E endemic Rift Valley Cichlids:** 1, Mr. and Mrs. Lake (Grimsby and Cleethorpe); 2, Mrs. R. J. Heppinstall (Castleford); 3, P. Cayton (Mex.). **Fighters:** 1, Mr. and Mrs. Brackburn (HCAG); 2, Mrs. B. J. Heppinstall (Castleford); 3, Mr. and Mrs. Brackburn (HCAG). **Small Anabantids:** 1, Mr. and Mrs. D. Penny (Ind.); 2, Mrs. Anderson (Wyke); 3, Mr. and Mrs. Clark (Doncaster). **Large Anabantids:** 1, F. S. Draycott & Sons (A & D); 2, Mr. and Mrs. Howell (A & D); 3, Mr. and Mrs. Finby (Scar.). **Sharks:** 1, Mr. and Mrs. Howell (A & D); 2, Mr. and Mrs. Brackburn (HCAG); 3, Mr. and Mrs. Clark (Doncaster). **Fosses:** 1, Mrs. C. Sutton (Cudworth); 2, M. Soavey (Oley); 3, Mr. and Mrs. Brackburn (HCAG). **Rasbora:** 1, Mr. and Mrs. Howell (A & D); 2, Mr. S. Sutton (Cudworth); 3, Mr. and Mrs. Lake (Grimsby and Cleethorpe). **Danios and Minnows:** 1 and 2, Mr. and Mrs. Lake (Grimsby and Cleethorpe); 3, Mr. and Mrs. Thorpe (Doncaster). **Corydoras Gato:** 1, Mr. and Mrs. Lloyd (Workshop); 2, Mr. and Mrs. Hooley (Workshop); 3, Mr. and Mrs. Riley (GPO). **A.O.V. Catfish:** 1 and 2, Mr. and Mrs. Howell (A & D); 3, T. Stanfield (SJS). **Loaches and Botias:** 1, Mr. and Mrs. Richardson (Scarborough); 2, Mr. and Mrs. Hooley (Workshop); 3, Mr. and Mrs. Riley (GPO). **Egg-laying Toothbrush:** 1, Mr. and Mrs. Lake (Grimsby and Cleethorpe); 2, E. Eyre (N.E. Yorks.); 3, T. Groom (Doncaster). **A.O.V. Tropical (Smith):** 1, Mr. and Mrs. Hooley (Workshop); 2, Mr. and Mrs. Riley (GPO); 3, S. Taylor (Wyke). **A.O.V. Tropical (Lange):** 1, Mr. and Mrs. Howell (A & D); 2, Mr. and Mrs. Copley (Doncaster); 3, Mr. and Mrs. Penny (W.D.). **Pais (Livebearers):** 1, Mr. Coleman (Grimsby and Cleethorpe); 2, D. Barratt (BBC); 3, Mr. and Mrs. Sellers (Ind.). **Pais (Egg-layers):** 1, T. Reed (Workshop); 2, Mr. and Mrs. Lake (Grimsby and Cleethorpe); 3, P. Cayton (Mex.). **Breeders (Egg-layers):** 1, Mr. and Mrs. Hooley (Workshop); 2, Mr. and Mrs. Bradbury (HCAG); 3, B. Leaf (Mex.). **Breeders (Egg-layers):** 1 and 2, Mrs. Brackburn (HCAG); 3, Mr. and Mrs. Nelson (Ashby F.K.). **Breeders (Live-lives):** 1-2; 1, 2 and 3, F. S. Draycott & Sons (A & D). **Breeders:** 3-4; 1, Mrs. Anderson (Wyke); 2, F. S. Draycott & Sons (A & D); 3, P. Cayton (Mex.). **Ladies (Live):** 1, Mrs. Sellers (Ind.); 2, Mrs. Lloyd (Workshop); 3, Mrs. Barlow (Mex.). **Ladies (Egg):** 1, Mrs. S. Penny (Ind.); 2, Mrs. Newham (HCAG); 3, Mrs. Turner (Ind.). **A.V. Female (Live):** 1, F. S. Draycott & Sons (A & D); 2, D. Barratt (BBC); 3, Mr. and Mrs. Sisk (SJS). **A.V.**

Female (Egg): 1. Mr. and Mrs. Clark (Doncaster); 2. Mrs. McIlaine (Lincoln); 3. Mr. and Mrs. Hooley (Workop). Plants: 1. D. King (Doncaster); 2. Mr. and Mrs. Hovell (A & D). Furnished Jar: 1 and 2. Mr. and Mrs. Hooley (Workop); 3. Mr. and Mrs. Pickford (Doncaster). Novelties: 1, 2 and 3. K. Lancashire (Doncaster). Goldfish and Concret: 1. Mrs. Turner (Ind.); 2. Mr. and Mrs. Silk (SIS); 3. Mr. and Mrs. K. Allard (A & D). A.O.V. Colwater: 1. T. Reed (Workop); 2. Mrs. C. Casey (York); 3. D. A. Todd (Hull). Shubunkins and Fancy Goldfish: 1. Mr. Leafe (Mex.); 2 and 3. Mr. and Mrs. Silk (SIS).

Sunderland A.S. open show results: Class B: 1. J. McCutcheon (Gateshead); 2. W. Taylor (NOVOS); 3 and 4. R. Ashcroft (Redcar); B: 1, J. and L. Wilson (Ind.); 2. J. McCutcheon (Gateshead); 3. J. Priestly (Stanley); 4. M. Hall (N. Aycliffe); C: 1. S. Tipper (Redcar); 2. M. Hepson (Sunderland); 3. S. Scoble (Sunderland); 4. D. Hall (N. Aycliffe); Cb: 1. S. Kelly (N. Aycliffe); 2. L. Burdis (Hexham); 3. P. Kelly (N. Aycliffe); 4. M. Conway (Bimbo); Cc: 1. J. Middleman (Stanley); 2. S. Tipper (Redcar); 3. D. Wilson (Redcar); 4. B. Corner (Gateshead); D: 1. C. Smith (EDAS); 2. D. Morgan (N. Aycliffe); 3. M. Hall (N. Aycliffe); 4. L. Burdis (Hexham); Ds: 1 and 2. Mr. and Mrs. Roe (B. Auckland); 3. S. King (Ind.); 4. B. Hornsby (B. Auckland); Dc: 1 and 2. E. Hobson (Ind.); 3. L. Burdis (Hexham); 4. B. Corner (Gateshead); Dd: 1. E. A. Enright (Sunderland); 2. R. Robinson (Uwerth); 3. J. T. Taylor (Ind.); 4. Mr. and Mrs. Gosland (N. Aycliffe); E: 1. J. Priestly (Stanley); 2. D. Hall (N. Aycliffe); 3. J. and L. Wilson (Ind.); 4. J. Smith (EDAS); E: 1. L. Burdis (Hexham); 2. M. Hall (N. Aycliffe); 3. W. Taylor (NOVOS); 4. K. Dodd (B. Auckland); F: 1. F. Barrow (Gateshead); 2 and 3. M. Conway (Bimbo); 4. M. Coft (W/O AS); G: 1. S. and D. Smith (Hartlepool); 2. R. J. Wilkinson (Birtley); 3. P. Kelly (N. Aycliffe); 4. M. Conway (Bimbo); H: 1. R. Kirkup (Carr Uffr); 2. S. King (Ind.); 3. M. Hepson (Sunderland); 4. D. Morgan (N. Aycliffe); I: 1. P. Barrow (Gateshead); 2. A. Richardson (Gateshead); 3. A. Richardson (Gateshead); 4. M. Hepson (Sunderland); K: 1. P. Barrow (Gateshead); 2. W. Taylor (NOVOS); 3. S. Tipper (Redcar); 4. J. and L. Wilson (Ind.); L: 1. B. Corner (Gateshead); 2. K. Pearson (Sunderland); 3. D. Turnbull (Birtley); 4. R. Kirkup (Carr Uffr); M: 1. Mr. and Mrs. Roe (B. Auckland); 2. S. and D. Smith (Hartlepool); 3. J. and L. Wilson (Ind.); 4. D. and T. Clark (Sunderland); M: 1. D. and T. Clark (Sunderland); 2. D. Morgan (N. Aycliffe); 3. P. Kelly (N. Aycliffe); 4. D. Morgan (N. Aycliffe); N: 1. J. Hepson (Sunderland); 2. M. Conway (Bimbo); 3. B. Corner (Gateshead); 4. S. Kelly (N. Aycliffe); N-or: 1. S. Kelly (N. Aycliffe); 2. J. and L. Wilson (Ind.); 3. N. M. Scott (T/O AS); 4. D. Morgan (N. Aycliffe); O: 1. J. Priestly (Stanley); 2. M. Middleman (Stanley); 3. N. M. Scott (T/O AS); 4. J. Brady (Bimbo); P: 1. S. Tipper (Redcar); 2. Mr. and Mrs. Roe (B. Auckland); 3. S. Kelly (N. Aycliffe); 4. J. and L. Wilson (Ind.); Q: 1 and 2. D. Turnbull (Birtley); 3. S. King (Ind.); 4. M. Hall (N. Aycliffe); R: 1. S. King (Ind.); 2. J. Middleman (Stanley); 3. N. M. Scott (T/O AS); 4. Mr. and Mrs. Roe (B. Auckland); S: 1. L. Burdis (Hexham); 2. S. D. and E. Smith (Hartlepool); 3. D. Morgan (N. Aycliffe); 4. P. Rice (Bimbo); T: 1. S. Kelly (N. Aycliffe); 2. M. Conway (Bimbo); 3. L. Burdis (Hexham); 4. Mr. and Mrs. Roe (B. Auckland); U: 1. Mr. and Mrs. Roe (B. Auckland); 2. P. Robinson (Ind.); 3. B. Jackson (Ind.); 4. A. Brown (Uwerth); V: 1 and 2. K. Dodd (B. Auckland); 3. J. Harrison (Ind.); 4. Mr. and Mrs. Roe (B. Auckland); W: 1. K. Dodd (B. Auckland); 2. P. Robinson (Ind.); 3. A. Brown (Uwerth); 4. J. Brady (Bimbo); X: 1. Roe and Clark (B. Auckland); 2. D. Morgan (N. Aycliffe); 3. J. T. Taylor (Ind.); 4. J. Brady (Bimbo); X-or: 1. J. Priestly (Stanley); 2. M. Hepson (Sunderland); 3. L. Burdis (Hexham); 4. M. Hepson (Sunderland); Y: Juniors: 1. D. Hall (N. Aycliffe); 2. M. Middleman (Stanley); 3. J. Corner (Gateshead).

Best Fish in Show: R. Kirkup (Carr Uffr), *Corydoras reticulatus*. **Best Pair:** J. Hepson (Sunderland), *Aquidius scarsi*. **Best Breeder:** J. Priestly (Stanley), *Poecilia reticulata*. Total number of entries: 357.

The second open show held by the Northumbria Coldwater Fish & Pondkeepers Society was held at the Northumbria Deaf Mission, St. Marks, Ashfield Terrace, Goschester Road, Newcastle upon Tyne NE4, on Sunday 2nd October.

On behalf of all the members of our Society I would like to express our most sincere thanks to your goodwives, all the supporting exhibitors from as far away as Edinburgh to the north, and Harrogate to the south; and of course to the hard work of the volunteers and members who attended to the catering needs of the exhibitors and visitors. The result was an astounding success, and we believe a "real good time" was had by all.

All first place winners received trophies and a digital watch pen.

Best Fish in Show received (a) Best Fish trophy (Personal trophy); (b) Aquarist Gold Pin; (c) NCFFS Gold Medalion; (d) Class trophy (Personal trophy); (e) Silver Digital watch pen.

Best Exhibitor: The exhibitor gaining most points for total exhibits (up to fourth place) was presented with a most handsome perpetual trophy in addition to all the trophies for the various classes.

In the event the winner tied with another for total points and the decision was made on the basis of the greater number of first places.

Results: Class A: 1. K. Harrison (NCFFS); 2. J. Brady (B); 3. Mr. Dodd (BIA); 4. Mr. and Mrs. Roe (BIA); 5. J. Me. and Mrs. Roe (BIA); 2. R. Scott (NCFFS); 3. D. Young (NCFFS); 4. J. Brady (B); B: 1. I. McDermid (SGG); 2. Mr. Hunt (NOVO); 3. I. McDermid (SGG); 4. Mr. Williams (Ind.); Bb: 1 and 2. S. Wilson (SGG); 3. G. Young (SGG); 4. J. Harrison (Ind.); C: 1. A. Picking (Bim.); 2. D. Clark (D); 3. T. McLean (SGG); 4. A. Picking (Bim.); Cb: 1. G. Young (SGG); 2. J. Harrison (Ind.); 3. A. Picking (Bim.); 4. R. Scott (NCFFS); Cc: 1. Mr. and Mrs. Roe (BIA); 2 and 3. G. Young (SGG); 4. J. Harrison (Ind.); D: 1. H. Richardson (D); 2 and 3. D. Hall (NCFFS); 4. R. Hall (NCFFS); Ds: 1. J. English (NCFFS); 2. D. Young (NCFFS); 3. K. Ball (Ind.); 4. H. Kesteven (NCFFS); E: 1. T. McLean (SGG); 2. D. Hall (NCFFS); E: 1. D. Hall (NCFFS); F: 1. J. Young (NCFFS); 2. Mr. and Mrs. Roe (BIA); 3. Mr. Dodd (BIA); **Best Fish in Show:** Mr. I. McDermid (SGG) with *Comodon* *Gudamah*. **Best Exhibitor:** Mr. and Mrs. Roe (BIA) (decided on check back). **Best Exhibitor runner-up** with same points total: Mr. D. Hall (NCFFS).

At the recent annual general meeting of Darlington & District A.S. the following officers were elected: Chairman, Mrs. J. Abbley; Vice-Chairman, Mr. K. Brewer; Secretary, Mr. K. Rodway, 32 Belgrave Street, Darlington, Co. Durham. Tel: (0345) 48754.

Ausfield Aquarist Association would like to thank all who attended their recent open show and most apologise for any inconvenience caused to them by circumstances beyond their control. We intend next year to have an entirely different venue and hope we can rely on your continued support.

CHANGE OF SECRETARY
Readers are asked to note that the secretary for the Yorkshire Association of Aquarists is now Sandra Stanfield of 16 Hope View, Windhill, Shipley, West Yorkshire. Tel: 0274 999097.



Paisley & District A.S. held its last meeting on 4th October when the table show on the night was *Characin*. The results were as follows: Seniors: 1. Red Eye Tetra; 1. Keag Lindsay; 2. Lemon Tetra; Ian Lindsay.

3. Black Neon; Ian Lindsay; 4. Hatchet; Bill Dunbar; Juniors: 1 and 2. Black Widow; Richard Brooking.

The club meets on the first Tuesday of every month at 7.15 p.m. in the Museum and Art Galleries, High Street, Paisley. Everyone welcome, further details can be obtained from the club secretary, Mrs. E. Lindsay, 71 Wright Street, Renfrew. Phone: 041-889 3772.

RESULTS of the Edinburgh A and P show: Total No. of entries: 281; **Best Fish in Show** (City Limit Video Trophy): W. Brown (Kirkcaldy); **Rozelle Trophy** (Livebearer): W. Brown (Kirkcaldy); **Phoenix Trophy** (Characins): T. Ramsay (Scottish); **Henderson Trophy** (Barbs): D. Dobbie (Dunfermline); G. and T. Forsyth Trophy (Cichlids): B. McFarquhar (Aberdeen); S.M. Salsarsons Trophy (Anabantids): T. Ramsay (Scottish); **The Aquarium Cup** (Carrish): Y. Downie (Dalkhous); E.A.P. Club Trophy (Barbours): I. Wells (Dunfermline); Elaine and Kevin Trophy (Sharks and Loaches): J. Meyer (BKA, Edin.); **Pegasus Disco Trophy** (Best Pair): T. Ramsay (Scottish); E.A.P. Trophy (Breeders, Livebearers): R. MacInnoch (Muirhouse); **Tower Trophy** (Breeders, Egg-layers): Y. Downie (Dalkhous); **Pen and Sylvia Trophy** (Best Coldwater): T. McLean (Scottish Goldfish Group); **Scott and Thompson Trophy** (Best Plant): Y. Ramsay (Scottish); E.A.P. Trophy (Best Junior): D. Sinclair (Edinburgh).

Dates for the diary

A monthly information column to keep you up to date on forthcoming events.

DECEMBER

15th December: **PRESTON & DISTRICT A.S.** Christmas dance, disco, buffet, presentation of club trophies. Visitors welcome. Further details and tickets from the Club Secretary, J. Crosswell, Chorley 69312.

JANUARY 1984

20th January: **CENTRAL MIDLANDS CICHLID GROUP** meeting at the Cranock Youth and Community Centre, Avon Road, Cannock, Staffs. Talk by Ian Strick of the B.C.A. Visitors welcome. Further details of the C.M.C.G. available from Maureen Hall, 71 Saxon Road, Penkridge.

22nd January: **BIMBI AQUARIST AND STUDY SOCIETY** open show, at Felton Community Centre, Crowhill Lane, Felton, Tyne and Wear. For programme, information or further details contact: show manager, J. P. Brady, 40 Harland Drive, Springs Estate, Birtley, Chester-Le-Street, Co. Durham DH1 2LE. Tel: 091-450 9987.

MARCH

24th March: **EAST DULWICH A.S.** annual open show at Paisley Hall, Soodford Road, Manor Place, Walworth, London SE17. For further information please contact The Secretary, D. Winder, 31 Edwynson Road, Brockley, London SE14 2DE.

APRIL

8th April: **CENTRAL MIDLANDS CICHLID GROUP** 1st "Clubbed Only" open show. To be held at the Penkridge Middle School, Teddesley Road, Penkridge. Details and show schedules available from either Maureen Hall, 71 Saxon Road, Penkridge, Staffs; or Mick Kirkham, 10 Bracken Way, Rugeley, Staffs. 23 classes plus auction and other attractions.

26th April: **TAUNTON & DISTRICT A.S.** open show to be held at the Youth and Community Centre, Tangier, Taunton. Schedules available from P. W. Cole, "Widewater Cottage", Soreth Owl, Hunsworth, Bridgewater, Somerset TA7 0AJ.