

JANUARY 1984 80p

# AQUARIST

AND PONDKEEPER

The Magazine for Fishkeepers



**ATLANTIC WRASSES** *in colour*  
**BASIS OF FISH HEALTH** *new series*  
Spotlight on the **CONGO TETRA**



#### COVER STORY *Photo: A. van den Nieuwenhuizen*

The Golden Gourami is a colour variety of *Trichogaster trichopterus*. Other varieties include the Two/Three-spot, Blue, Opaline (Cosby), Platinum, Brown, Lavender and Amethyst Gouramis. The Brown, Lavender, Two/Three-spot and Blue are variously reported as being the true wild types. The confusion arises because of the "flexibility" of colouration that is inherent in the species, the presence of spots in differently coloured fish and the loose way in which the common names have been used over the years, e.g. the Brown and Lavender may well be one and the same, differing only in name.

One thing is definite, though—the Golden, Platinum, Opaline and Amethyst Gouramis do not occur in the wild.

The Golden variety is known to have arisen by chance in matings of the Opaline Gourami carried out in outdoor pools in East Germany in 1970.

Since they belong to the same species as all the other varieties, crosses between Golden Gouramis and any of the others produce fertile offspring. This allows investigations into the inheritance of colour to be carried out easily. Work of this kind done by the Anabantoid Association of Great Britain, following earlier experiments by the British Aquarists Study Society, suggests that colour inheritance in *T. trichopterus* is governed by two genes.

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## AQUARIST



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## A letter from the Consultant Editor

DEAR READERS,

First of all, I would like to wish you a very happy New Year and thank you for your tremendous support during 1983.

As you know, we launched a number of major series during the last year and carried out quite a few streamlining alterations. However well-intentioned our editorial decisions may be, the only real proof we have of their value comes from readers' reactions to changes. In this department, you have left us in no doubt whatsoever that you strongly approve and that our concerted efforts at providing a better magazine are well worth the energy and time we are putting into the job.

I, personally, have received great encouragement from many quarters during my lectures, visits and discussions throughout the country. It is particularly gratifying to be made aware by experienced aquarists that they too read 'Tomorrow's Aquarist,' our series aimed primarily at newcomers to the hobby. Sometimes, space does not allow us to include a monthly reminder that we invite contributions from readers for this series. May I, there-

fore, take this opportunity to thank you for the material that you have already sent in and repeat my request that you keep doing so? Our success so far has relied heavily on your contributions and we look forward to an even more successful 'Tomorrow's Aquarist' in 1984.

By the way, have you sent in your entry for our Design-a-Fish Competition sponsored by Tetra? See the December 1983 issue of *A & P* for full details of this intriguing Competition which closes on 31st January. Keep the entries coming!

Two aspects of our work that have come in for praise from professional ichthyologists have been the 'A-Z of the Aquarium' (our 'illustrated dictionary') and our Special Issues.

The 'A-Z of the Aquarium' contains material which we hope is up-to-date, scientifically accurate and presented in 'digestible' language. The comments we are receiving indicate that we are achieving this difficult but worthwhile aim.

The three Special Issues we published in 1983 were on the Coldwater Hobby, Cichlids and Catfish. All carried contributions from authorities in the respective fields and were particularly well received. We, therefore, plan to continue with this philosophy during 1984, our first such issue of the year being next month's Marine Special.

Our 'Meet the Societies' page has

proved very successful indeed, with encouraging news of increased interest and improved membership being reported by those Societies that we have already featured. If you would, therefore, like us to give publicity to your Society, be it a general or a specialist one, then drop us a line. We look forward to being given the opportunity of providing you with free nationwide coverage.

This month sees the launch of a major new series on Fish Diseases. It is being written by two eminent authorities in the field, Dr. Anne Powell and Dr. Roger Sweeting of Mayfly Fish Health Service, a division of Blue Waters (Fish) Ltd. Drs. Powell and Sweeting are already familiar to readers via our articles on their excellent 'Fish Biology for Aquarists' courses. I was lucky enough to be invited to attend a one-day course on Fish Diseases run by Mayfly some months ago and found the experience (just as all the other participants did) totally absorbing, informative and highly satisfying. I strongly urge you to enrol next time you see an advertisement for such a course. You will not be disappointed—I can guarantee that.

Finally, I would like to thank you once more for supporting us in 1983, and wish you a highly successful 1984.

We look forward to your continued support.

Happy Fishkeeping,  
John Dames Consultant Editor.

### WATCH OUT FOR OUR SPECIAL MARINE ISSUE NEXT MONTH

Including of course all your  
favourite regular features

BE SURE—ORDER A COPY NOW!

#### IMPORTANT DATES FOR YOUR 1984 DIARY!

##### SCOTTISH AQUARIST FESTIVAL

Motherwell Civic Centre **MAY 26th-27th**

##### AQUARIAN FISHKEEPING EXHIBITION '84

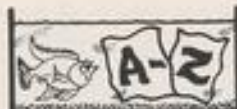
Kempton Park Racecourse **JUNE 9th-10th**

##### YORKSHIRE AQUARIST FESTIVAL

Doncaster Racecourse **AUGUST 18th-19th**

##### BRITISH AQUARIST FESTIVAL

Belle Vue, Manchester **NOVEMBER 3rd-4th**



## A-Z of the Aquarium

### Seahorses

SEAHORSES, all thirty-or-so species of them (belonging to the genera *Hippocampus* and *Phyllopteryx*), are fascinating in more ways than one. For a start, it is difficult to think of a more 'unfishlike' looking fish than a Seahorse. Secondly, their breeding habits are almost unique, being shared only with a very few other fishes, such as the closely related Pipefishes. In the Seahorse, the female actually lays the eggs inside a brood pouch which the male has in his belly region. Having done this, she plays no further part in the proceedings. This is left entirely up to the male who incubates the eggs for several weeks until they hatch. When they do, the male ejects them from his brood pouch, a few at a time.

The newly-hatched fry are small replicas of their parents.

Seahorses are unique among fishes in having the head set at 90° to the body. In addition, the body is covered in 'armour plating', the caudal (tail) fin is lacking and the tail itself is prehensile, i.e. it can be used almost as an extra limb to anchor the animal (as in some New World monkeys). Since Seahorses lack a caudal fin, swimming is effected by means of wavelike movements of the dorsal (back) fin which, owing to the upright posture of the body, points in the same direction as the caudal fin does in a normal fish.

In olden days, Seahorses were afforded magical and medicinal properties. For example, their ashes were thought to have hair-restoring properties as well as being effective against the bite of a rabid or mad dog.

In addition to the Sub-family Hippocampinae to which Seahorses belong,



there is a second one in the Family Syngnathidae. This is the Sub-family Syngnathinae to which the 150 species of Pipefish belong.

Although anatomically and reproductively similar to Seahorses in that the body is encased in bony 'armour', in the absence of pelvic fins and in the male brooding of eggs, Pipefishes can be distinguished from their close relatives by their normal swimming angle.

All Syngnathids are difficult to keep in peak condition in aquaria.

### Trichomycteridae

THE Trichomycteridae (Pygidiidae) are also known as the Parasitic Catfishes. There are about 27 genera with some 185 species in this Family, most of which have never been seen in the aquarium hobby.

Despite their rather ominous common name, not all the Trichomycteridae are parasitic.

One of the more peaceful members of the Family is *Pygidium itatiayae* which is predominantly a twilight species but one that is nevertheless quite active in aquaria during the day as well.



*Eremophilus mutisii*  
Photo—D. Lambourne

The Catfish Association of Great Britain (CAGB) give details of another species, *Hemiodonotus maculatus*, in their excellent publication, simply called Volume 1.

Information is, therefore, scant and hard to find. Hopefully, as the range of 'aquarium' species expands, there will be occasional (perhaps accidental) importations, particularly since the geographical distribution of Trichomycterids completely overlaps that of many other Catfish well-known to the hobby. If this ever proves to be the case, then it would present a golden opportunity for aquarists to contribute significantly to the relatively small body of knowledge currently available.

We do know, however, that some of the parasitic species pierce the skin of living fish and even mammals and gorge themselves on blood. Others, notably *Branchiocoica* and *Vandellia*, live, and almost certainly breed, inside the gill chambers of larger Pimelodid Catfishes.

*Vandellia* is a particularly interesting species in that it is more feared in its



Ventral view of a Carnero (*Vandellia cirrhosa*). Note the sharp teeth and spines. After Vinton, 1941

natural habitat than even the notorious Piranha. It is variously known as the Carnero or Candiru (depending on the country) and is known to swim up the urinary tract of cattle and humans and lodge itself internally by means of spines causing great pain and haemorrhage. Since this behaviour tends to coincide with the victim urinating in the water, it is believed that the fish responds to the current thus created, misinterpreting it for the exhalant gill-stream produced by its more normal fish host. Despite the damage it can cause, *Vandellia* is reportedly a very delicate species in aquaria.



## Sharks



Nurse Shark (family Orectolobidae) photographed at Xotic Pets Ltd

In scientific terms, Sharks constitute thirteen extant (living) and several extinct Families or marine (rarely brackish) fish which are distinguished, predominantly, by the possession of a skeleton made of cartilage instead of

bone. This single feature places them, along with Skates and Rays, in the Class Chondrichthyes.

The well-known Whale Shark, *Rhinocodon typus*, is the largest fish in the world with individuals measuring more than 15 metres (c. 50 feet).

From the aquarists' point of view, very few Sharks can be conveniently kept in the home. However, some, such as the various species of Dogfish, *Scyllorhinus*, have been kept from time to time, along with the odd, small Nurse Shark of the Family Orectolobidae. Occasionally, Mermaid's Purses, which are the egg cases of some Shark species, can be obtained and the development of the embryo observed up to birth. Rearing of the newly-hatched Shark, though, is not an easy task.

The 'Sharks' that most hobbyists are familiar with are not even remotely related to the true Sharks mentioned above. The only thing they share is a shark-like body shape—nothing else.

Even at the most fundamental level, they differ in that the aquarium 'Sharks'

have a bony skeleton and, as such, belong to the Class Osteichthyes.

Most of the 'Sharks' are members of the Family Cyprinidae which includes the Carps, Minnows, Barbs and many other well-known fish. Of these, the most common 'Sharks' belong to the genera *Labeo*, *Labiobarbus*, *Balantochelus*, *Osteochilus*, *Morulus*, and the 'un-shark-like' *Luciosoma* (most closely related to the Rasboras).

In addition to these Cyprinidae, at least one Catfish, *Pangasius nashi* (belonging to the Family Pangasiidae, according to some authors, or to the Schilbeidae, according to others), is also regarded as a 'Shark'.



*Labeo bicolor* is the most popular species of aquarium 'shark'

## Triggerfishes



Generalized diagram of a Triggerfish showing the main characteristic features

TRIGGERFISHES belong to the Sub-family Balistinae of the Family Balistidae, the Filefishes, Monacanthinae, constituting the other Sub-family.

Triggerfish are unusual in a number of ways. For a start, they lack proper pelvic fins—if anything, they may have a pelvic spine or tubercle, nothing more. In addition, the first spine of the dorsal fin has a 'locking' device which the fish can use to lodge themselves inside crevices from which they are next to

impossible to remove. The locking mechanism is provided by the shorter second dorsal spine which must return to its normal position before the fin can be unlocked. In some species, there is a rough area around the caudal peduncle which can be used as a weapon in a similar fashion to that found in Surgeonfishes. If this were not enough, Triggerfish can rotate their eyes independently, almost like Chameleons. Add to this the unusual position of the eyes which, in most species, are located high on the head and almost one third of the way 'down' the body, and there is no denying that Triggerfishes are rather special.

Triggerfish tend to be aggressive and, at times, unpredictable. They should, therefore, be kept on their own, although juveniles of some species may be kept for a time in a community tank with robust species. The Clown Trigger, *Balistoides niger*, has been very expensive in the past and, although the price has fallen considerably from the original £250 of the early 1950's, it is still among the dearer imports. The main reason for this is not only that

this species is a deep water spawner, but the young remain in deep water until they have attained a size of 10 cm or so before returning to the shallower parts of the reef. Small specimens, which are the most suitable ones to keep in aquaria, are consequently very labour intensive and expensive to collect.



*Rhinecanthus aculeatus*, the Picasso Trigger. (Formerly *Balistapus aculeatus*)

Filefishes are distinguished from Triggerfishes in that the former usually have only two dorsal spines instead of three (the second spine may be small or absent), possess simple rays in their fins (Triggers have branched rays), have fewer teeth, a 'furry' body and irregularly arranged scales.

# The Clown Loach



The Clown Loach (*Botia macracanthus*) is one of the most striking of all the bottom feeders. Few of the freshwater tropicals can match its beauty. Its brilliant colouring and peaceful disposition make it a valuable addition to the community tank.

Its body is a beautiful golden orange with three black vertical bars, one through the eye, one just in front of the dorsal fin and one running from the dorsal fin and into the anal fin. The ventrals, pectorals and caudal fins are brighter and more reddish than the body.

A native of Borneo and Sumatra, the Clown Loach has a preference for soft, acid water although this is not critical. Many of the references I have seen in books and magazines might deter the inexperienced aquarist from adding this attractive and interesting fish to his collection.

I have seen it described as a fish that is best kept in groups while other references suggest that it is liable to fight and establish rigid peck-orders when larger specimens are kept together. It has been described as a difficult fish for beginners—one that is only happy when it is in a cave.

This might well dissuade many from obtaining the Clown Loach especially since it is one of the more expensive of the freshwater tropicals. This is a pity because it is an endearing as well as an extremely attractive fish.

by  
**John Bainbridge**

I introduced a single Clown Loach into my community tank five years ago. Having failed to study the fish's background and requirements in great detail I did not provide the caves that are generally regarded as being essential to its well-being. There were four rocks positioned towards the back of the 36 in. aquarium. Two of these rocks were quite close together, forming a sort of "corridor." The others were more or less evenly spaced. The Clown Loach soon adopted a space under an overhanging rock near the back of the aquarium.

Shortly after obtaining the fish we were alarmed to see it lying on its side under this rock; slight fin movements being the only indication that it was still alive. We learned later that it is a normal characteristic for the Clown Loach to "rest" in this position.

For it to become a confident and active community fish it is essential to give the Clown Loach plenty of cover. This can largely be achieved by keeping the aquarium well-planted. On one occasion I allowed my tank to become rather bare of plants and the loach disappeared for several days. A well-planted aquarium with several hiding places gives it the confidence to

swim freely knowing that it can always retreat to a secluded spot whenever it feels threatened.

Although it is more active when the aquarium light is switched off it often swims freely under the full glare of gro-lux lighting. It does an efficient job of cleaning up food from the bottom of the aquarium—digging its head quite deeply into the ground.

Once it has become established it will swim close to the front glass even when someone is sitting close by. It will retreat quickly when disturbed by sudden movements. Occasionally it will come to the surface to feed although it is not well-adapted to perform this feat.

I feed with a staple diet flaked food with a weekly meal of live food—usually *daphnia* or bloodworms. As with all bottom feeders it is essential to check that the right amount of food reaches the gravel—enough to ensure that the fish are being fed without causing pollution by over feeding.

It is essential to consider the varied requirements of all members of the community aquarium. In the case of the Clown Loach the provisions of a suitable cover is very important. Although my Clown Loach appeared to be content with its environment I have rearranged the layout to provide caves near the front. These give it secure hiding places where it can still be observed and admired.



## 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



Richard Sankey

### SPECIAL ANNOUNCEMENT

*This month sees a change in our Panel of Experts. Many thanks to Richard Sankey for the invaluable assistance that he has given our readers since June 1982. Richard replaced Graham Cox when the latter had to give up his position on our Panel owing to heavy business commitments. We are, therefore, delighted to welcome Graham back and look forward to renewing our association with him.*

### Tropical



#### power cuts . . .

Maybe I am being a little paranoid about a problem which really doesn't exist, but how do I look after my tropical community tank in the event of a power cut?

There really isn't a problem! Most power cuts only last a few hours at the most. I suggest that you obtain one of the small torch battery operated air pumps from a local pet shop, and use this to provide aeration during the 'cut'. Also, as soon as the power goes off you could lag the tank with some polystyrene sheets, old blankets, etc.—to prevent the temperature falling too rapidly. Obviously this is only applicable in the winter! Remember that it is sudden temperature changes that kill fish, and most 'tropical' fish will survive for a while at 10-12°C, so long as the temperature falls (and rises again!) gradually.

If a power cut is imminent (and during the 'cut' itself) you should not feed the fish, and about 24-48 hours after the power cut (earlier if the fish appear in distress) you should carry out a one third water change.

#### swimbladder problems . . .

My goldfish appears unable to maintain its position in the fish tank. I assume that this is the infamous 'swimbladder disorder'. Is there a reliable treatment?



Fancy varieties of goldfish are prone to swimbladder disorders

The inability to maintain a position in the tank, or swimming with a pronounced 'list', may be the result of a swimbladder disorder. Such a problem may be caused by a number of factors, including sudden changes in temperature. As with 'pop-eye', there is no one cure, but the condition does not seem to be infectious. You could try placing the fish in shallow (8-10cm) water a few degrees warmer than the water it is in at the moment. The addition of 1-2 tablespoons of aquarium salt per 10 litres of water and gentle aeration are also a good idea. Feed sparingly on a nutritious diet, changing part of the water twice a week.

#### partial water changes . . .

I often read about 'partial water changes' being important in aquarium fishkeeping. What is meant by this?

In addition to the initial filling of a new aquarium, many aquarists are now aware that regular, partial water changes

**COLDWATER**

Arthur Boarder

**PLANTS**

Vivian De Thabrew

**KOI**

Hilda Allen

**MARINE**

Graham Cox

**DISCUS**

Eberhard Schulze

have a marked beneficial, rejuvenating effect on established tanks. Except in the case of gross tank pollution (eg. from overfeeding), an aquarium should rarely be emptied and totally cleaned out. It is far better to remove about 15-20% of the aquarium water every two to four weeks, and top-up with fresh tap water conditioned with *Aqua Safe* and, brought to the correct temperature with a little boiling water from a kettle. When a siphon tube is used to remove the tank water, accumulated debris, algae scraped from the glass, etc. can also be discarded at the same time. With the tank only partially full, this is an excellent opportunity to refurbish any filters and generally tidy up the tank decor. In the interests of safety, all electrical appliances should be disconnected whilst working on the tank. **C.A.**

**Coldwater****plastic tanks . . .**

I would like to increase my collection of coldwater fishes and plants but cannot have a pond or fish house in my garden. Could I use plastic tanks instead?

You could use plastic or fibre glass tanks but if they are to stand out of doors there will be the danger from ice forming on them during a severe winter. It would be possible to install heaters to switch on at times. Look through the adverts in the *Aquarist* for a supplier of the type of containers you require.

**chasing . . .**

I have some shubunkins in a tank and recently I added a pair of moors. The shubunkins chased one of the moors about the tank and started banging it against the side. Why did they act like this?

It appears that the shubunkins are male and the fish they were chasing was a female. The action is that of goldfish when they spawn and the males were ready for this and so they nudge a female to encourage it to lay. Put in a bunch of fine-leaved plants to receive the eggs and remove when you see eggs to another tank for hatching and rearing.



A male Shubunkin

**newts and goldfish . . .**

Could Newts eat small goldfish?

Any goldfish under an inch in length overall could be eaten by a newt. These creatures are greedy feeders and one need only watch one deal with a garden worm to realise this. I do not think that newts could

catch a small fish by swimming but they can lie in wait among plant growth and snap at anything moving near-by. A real danger in the breeding pond is that newts will lay their eggs in a spawning nest before fishes have used it. Then the tadpoles will hatch out before the fish fry and when not more than a week old they could eat the fry. **A.B.**

**Plants****plant ecology . . .**

It is my intention to build and stock two aquariums, the measurements of which are 48 in. x 18 in. x 15 in. The area in which I reside is a medium hardwater area, with a DH of 10.5, and an alkaline in excess of pH 7.8. It is my intention to use rainwater to reduce the DH level, and Sodium Biphosphate and peat to increase the acidity to pH 6.4 to 6.8 and the water temperature at 80°F.

The following plants are those that I would like to be able to use to furnish the aquariums, but I am unsure as to their suitability to flourish in the stated conditions: *Vallisneria spiralis*, *Cryptocoryne beckettii*, *Ambulia*, *Vallisneria torta*, *Amazon Sword*, *Cryptocoryne haerleiana*, *Acorus pumilus*, *Dwarf Sagittaria*, *Cabomba*, *Hairgrass*, *Bacopa caroliniana*, *Nuphar*, *Aponogeton undulatus* and *Hygrophila stricta*.

Could you suggest a good floating plant for these conditions?



As you realise, your water is too hard and alkaline for most tropical aquarium plants, which generally require slightly acid, soft water to thrive, therefore your decision to use rainwater and peat to soften the water is good. However, 80°F is too high for most plants; excessive heat forces plants, leading to rapid growth, but ultimately this weakens their cell structure and the leaves begin to drop off. I suggest you lower the temperature to 72°-76°F maximum.

Most of the species you mention are fairly compatible, except *Vallisneria spiralis* (asiatica), which ideally should be planted on its own, as it does not readily establish well with most other plants. However, if it is given plenty of room it will eventually slowly establish and flourish. The other doubtful one is Dwarf Sagittaria, which really requires medium-hard water with alkalinity of 8.0-9.0. Amazon Sword (*Echinodorus pinnatifidus*) requires a very nutritious medium, and it is a good idea to replenish its nutrients with clay granules or sun-dried clay balls from time to time. Cabomba needs strong light and very soft water, whereas *Vallisneria spiralis* requires medium-hard water with slight acidity. However, you should be able to arrive at a sensible compromise to satisfy both. *Acoris calamus* var. *pusillus* is really a bog plant, and will therefore tend to shoot out of the water, but you can control this to some extent by just snipping off the tips of the leaf-blades as they grow too tall. This will encourage the plant to bush out.



*Salvinia*—a beautiful floating fern

A good floating plant for these conditions would be *Salvinia*, which is very attractive and readily propagates, providing shelter for the fish. **V.T.**

## Koi



### dosing . . .

I have a book which gives dosage of treatments in ponds as so many parts per million. Not being sure how these should be interpreted I would like to have your advice.

Some books, notably those from overseas, tend to do this probably for convenience as a detailed explanation of individual applications is outside their scope. You may also find loose references to mg/l (milligrammes per litre) or parts thereof, and if quoting gallons these are most likely U.S., and not Imperial which we use. I cannot go into all the problems associated with treatments involving very strong or toxic substances that are only safe in closely controlled extremely small doses. It is wise to check and re-check the information as serious errors either by authors or the printers do occur.

A useful base to remember is that 1 mg/l is equal to 1 part in 1,000,000 or in our case is 1 gramme in 220 gallons. With the aid of a cheap calculator all things become possible provided you appreciate the absolute necessity of knowing exactly how much water there may be in your pond.

Either borrowing or hiring a water meter at the time of initially filling ponds has been proved very useful.

**H.A.**

## Marine



### dying inverts . . .

I am writing to you in the hope that you can offer some advice that may solve a problem which I have in my marine tank. First, the details are:

32 gallon marine invert. tank run on the 'natural system'. 15 lbs. of living rock and 1/2 inch coral sand provide bacterial filtration.

Power filter used to create currents. S.G.—1.025; pH—8.3; NH<sub>3</sub>—negative; NO<sub>2</sub>—negative; NO<sub>3</sub>—

negative; Copper—negative; Heavy metals—negative; O<sub>2</sub> sat.—high.

Lighting: 1 floraset mercury vapour lamp + 40w warm white light.

The tank contains 1 dancing shrimp, 1 small crab, 1 cowrie, 1 brittle star. The living rock contains bristle worms, minute shrimps and many small filter feeders. All this livestock is doing well. Also 5 types of higher algae all flourish. Feeding is by liquid invert food, twice weekly and occasionally freeze-dried plankton and brine shrimp. Feeding is kept low as it is a natural tank.

The problem is the fading and eventual death over 1-2 months of 1 sand anemone, 20 small anemones (1/2 inch diameter) on a piece of living rock, 1 large colony of polyps, 1 small sea urchin, 1 small nudibranch, 1 arrow crab.

Reading between the lines of your letter the only possible cause of the broad spectrum, (ie coelenterates and molluscs and crustaceans, etc.) losses which you have experienced is slow starvation and/or nitrite-poisoning (see B below).

The invertebrate food which you mention is micronised during manufacture to make it physically acceptable to filter-feeders. Freeze-dried foods are of very little nutritive value to anything.

The creatures which you are losing are either (i) *gross-particle feeders*, e.g. anemones, polyps, urchins and crab. These need regular 48 hour feeds of match-head sized chunks of fresh-frozen 'Shellmeat', 'Lancefish', 'Squid', 'Cockle', 'Whole Shrimp', 'Fish-Eggs', 'Mysis'. These foods must of course be gamma-ray irradiated;—or,

(ii) *browser*s, e.g. nudibranchs, which mostly seem to be herbivorous, although some of the more exotic species have extremely specialised feeding habits and prey on certain coelenterates—*anemone polyp deaths?*

Please remember: A) If your power-filter contains any filtrant medium whatsoever, then it must be turned off for 10-15 minutes after adding the micronised invertebrate food.

B) Since you are not using under-gravel filtration at all, your system has virtually no nitrification potential whatsoever. Your  $\frac{1}{2}$  inch of coral sand is worse than useless since the water trapped within it is stagnant and may be contributing to the nitrite toxicity.



Invertebrates such as corals and anemones are very sensitive to nitrite poisoning

The upshot of all these considerations is that, unless you are prepared to fit an undergravel filter—whether airlift operated or reverse-flow powerhead-operated is quite immaterial—then you will of necessity be committing your gross-feeders to a brief lifespan of slow starvation simply because you *dare not* adequately feed them without causing lethal nitrite toxicity problems. Don't just take my word for it. Feed your gross-feeders as necessary in the manner described in (i) above and then use an ultra-sensitive nitrite test kit to monitor the ensuing nitrite toxicity over the next 72 hours.

G.C.

## Discus



### mixed discus tank . . .

I am thinking of a Discus Fish tank, the size of which will be 48 inch by 12 inch by 18 inch. It will be filtered by a Rena 305 internal filter with a throughput of 250 litres an hour. It will be lit by a 36 inch Growlux tube. The fish will consist of 2 pairs of Brown Discus Fish and 5 Clown Loaches.

I have a number of questions:

(a) How long would I have to leave the light on each day and if the Growlux tube is not enough what else would I need?

(b) Would I be able to keep a pair of Keyhole Cichlids with the Discus Fish? Do they dig up the plants?

(c) What plants would be suitable? I will be having the gravel about 1 in. at the front rising to 3 in. at the back.

(d) Would I be able to keep 3 Corydoras Catfish and one Pictus Catfish with the Discus Fish and a beloved Siamese Fighter which I have kept in a community tank for a long while?

I have read a few books on Discus Fish and realize their water needs! I have not yet found information on the following—Would the Discus Fish be bothered by the other fish while spawning? What temperature should I keep the water at?

It is quite encouraging to receive a number of queries about the keeping of the Discus Fish from as young a lad as your goodself. (The youngest, however, was only 11 years of age and has since become quite an expert in looking after these fish.)

To answer your questions—All fish, and this includes Discus Fish, are on the whole not very fussed about the amount of light they receive every day. There are, of course, exceptions and these must be followed to create the right conditions for these special types of fish. However, Discus Fish do not fall into this special category and if the aquarium does not have any live plants I would have thought that about 8 to 10 hours of light would be enough and whether this light is Growlux, Truelite or any other light, or any other colour of light, should make no difference to the fish. It would, of course, be a different story if you also wanted to grow real live plants. Then you want at least 12 to 14 hours of light a day depending on the (a) Height of the Aquarium, (b) Temperature of the Water, (c) Type of Light Source and (d) Type of Plants. I have never found that one could get a good plant growth with a Growlux tube and I certainly would



Corydoras catfish are compatible with Discus

go for one of the 'white' type like: Truelite, Northlight, Sunglow or similar.

Keyhole Cichlids would be quite safe with Discus Fish and would not dig up the gravel. But why have only 2? I am a great believer that all fish, or almost all, ought to be kept in numbers and a small shoal of 5 or 6 is always better than 'just a pair'.

Although you may have installed your gravel in such a way that you have 1 in. in front and 3 in. in the back; it will not take very long and the substrate will be even all over the bottom of the tank, except if you keep it in place using rocks or slate or something to hold it back. As for plants: Amazon Sword Plants, Water Wisteria, Vallis (if the pH of the water is not too low), Onion Plants are always very good, although they are somewhat more expensive, they will last a very long time. Corydoras and Pictus are fine as long as the temperature of the water is not too high and the pH too low.

Discus Fish usually will not be bothered by other fish while spawning, but nothing will happen. If you want to raise baby Discus Fish you are advised to keep them by themselves.

The temperature of the water: As a general rule, the smaller the fish, the higher the temperature. Young fish should always be kept in a water with a temperature of about 88 to 90°F, whereas larger specimen can be kept somewhat lower but never lower than 84°F. Discus Fish will tolerate a range of temperature of between 80 to 98°F. (98°F should only be used as a treatment for certain ailments).

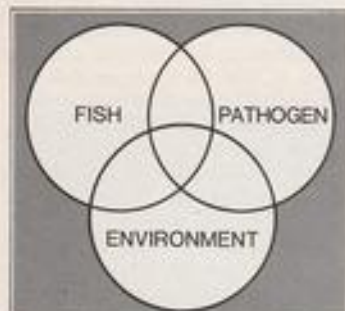
A good book I can also recommend where you will find a lot of your questions answered is: Discus, by G. Keller, published by T F H. **E.S.**



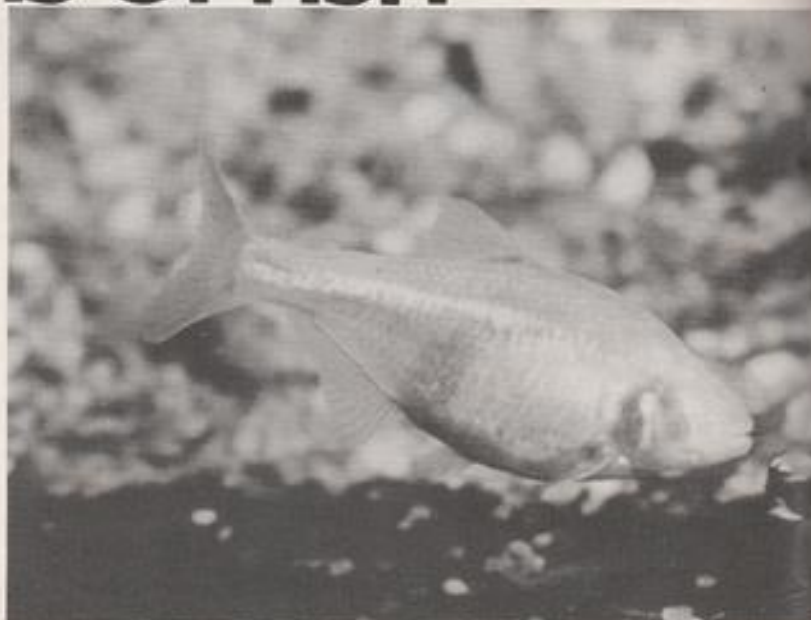
# THE BASIS OF FISH HEALTH

by 'Mayfly'

This is the first of a series of articles on fish diseases, most of which will describe specific disease organisms and fish problems. However, most diseases are a reflection of an upset between the delicate balance of fish, environment and potential pathogens. It is most easily envisaged by regarding these three factors as three overlapping circles (see illustration 1) which, when balanced, result in a healthy population of fish in the tank, pond or natural water body. When one circle is displaced, e.g., temperature rises above optimum, then the balance is upset and the fish start to lose condition. This, in turn, encourages bacteria or parasites to increase in number. In artificial environments like aquaria there are a number of states of health and ill-health that can be recognised. Given perfect conditions fish will grow, breed successfully at maturity and continue to go through breeding cycles at regular intervals. Relatively few



The overlapping circles illustrate the interaction of the 3 disease components: the state of the host, the pathogen and the environment. Upset of the balance of one or more of these can result in disease i.e. the overlap becomes greater



This healthy Blind Cave Characin (*Astyanax mexicanus*) is "in balance" with its environment and the disease-causing organisms in it

aquaria give fish this sort of conditions. Most fish though, do feed and grow even if the environmental cues and conditions do not permit breeding. As the environment becomes less good, growth rate falls and maximum size becomes smaller. If it is poor (this includes inadequate food, lack of space, wrong water quality, wrong physical surroundings as well as many other factors) then the fish may cease growing and even lose weight. Other symptoms such as fin splitting, fin erosion, scale loss or signs of damage without apparent injury may accompany this state. Finally, the fish becomes listless and eventually dies. This decrease in the state of vigour makes it easier for potential pathogens to invade, maintain themselves and reproduce on or in the fish. This is normally the stage at which the fishkeeper resorts to chemotherapeutics (chemical treatments) which may eliminate the pathogen, but not solve the problem.

Unfortunately because fishkeeping is big business, large numbers of ornamentals are crowded in sub-optimum conditions prior to mass export and given chemotherapeutics. The hobbyist, at the end of this line, receives a fish that has been subjected to this series of insults, puts it with his own stock and reaps the sad reward of the previous poor treatment.

The environmental factors that are most often to blame for losses of fish are dissolved oxygen, pH and temperature. Some consideration will be given to each of these in turn.

## 1. Oxygen

The solubility of oxygen decreases with increase in temperature and salinity so that at 5°C 12.9 parts per million can be dissolved in freshwater when it is in equilibrium with the air above it, whereas at 20°C only 9.2 parts per million will dissolve. For

...the figures are 10 ppm and 0.7 ppm respectively. Sometimes these figures are simply referred to as the 100% oxygen saturation levels. Water left standing in contact with the air will reach 100% saturation within a few hours. Fish use up the available oxygen, green plants in sunlight produce it. But plants at night stop producing oxygen and become consumers of it. Hence heavily weeded tanks or ponds in bright sunlight may become supersaturated (up to 250% oxygen) for part of the day. During this time oxygen is actually given off into the atmosphere. At night or in darkness, this level rapidly falls as plants, fish and any other organisms in the water all consume it. So levels down to 50% saturation may be reached. The fish's blood goes through similar changes and the rapid change in levels over a relatively short period

of time may result in oxygen coming out of the blood as bubbles, ('gas bubble disease' having similar effects to the 'bends' that divers sometimes experience). Apart from fluctuating dissolved oxygen levels presenting a problem to fish, consistently low levels are more obviously damaging. Reference was made earlier to 'available' oxygen. This is not the same as all the oxygen present. When levels fall to 4-5 ppm, most species of fish begin to experience difficulties in drawing into their blood any oxygen from the water and suffer what scientists euphemistically call 'respiratory embarrassment'. Such levels limit their ability to digest food and grow. There are, of course, fish that have evolved to cope with low dissolved oxygen situations. The goldfish is, perhaps, one of the most successful of these.

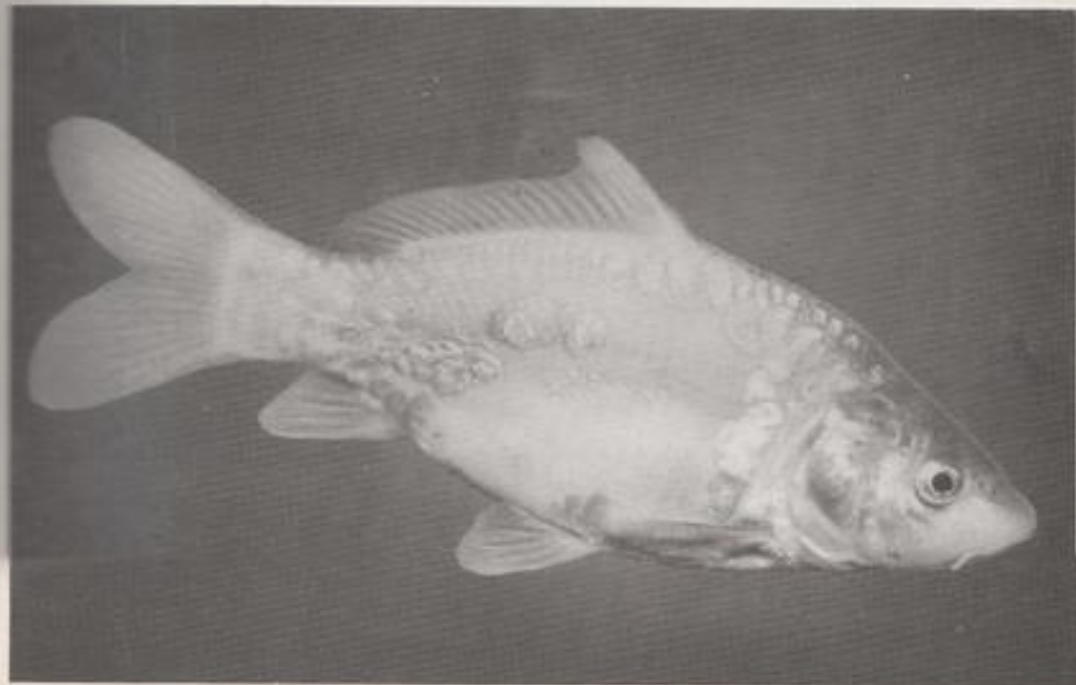
Any tank or pond will, over a period of time, accumulate detritus on the bottom, between stones, in sand or in gravel. This may consist of dead

plant material, waste food and fish faeces. Bacteria feed off this detritus and in the process use oxygen. Too much detritus results in an enlarged oxygen demand and may account for low levels of oxygen in the tank. Biological filters also consume oxygen for the same reason. If the amount of detritus is too much for the set-up then dissolved oxygen problems will arise. Balancing a tank or pond so that oxygen availability and consumption are equal is one of the most important pre-requisites for a good fish husbandryman.

## 2. pH

Some fish prefer acid conditions, some alkaline conditions, but most need neutral waters (pH of 6.8-7.2). Water that is hard, i.e., rich in calcium bicarbonate, can withstand the addition

**Temperate water fish, such as Mirror Carp (*Cyprinus carpio*), can suffer when temperatures rise fast in spring**





# THE BASIS OF FISH HEALTH

ions of acids from decomposing plants, fish faeces, etc. without undergoing any marked change in pH. It is referred to as well buffered. Normally hard water is slightly alkaline. Soft water is normally slightly acidic. The black waters of many tropical rain forests can be very acid—some South American rivers have pH's as low as 3. The fish that come from these areas are therefore able to withstand acid waters that would kill most temperate water fish. Acid waters are very poorly buffered and under some conditions (e.g., algal blooms) may turn alkaline. These pH swings kill fish. Slow changes in pH, as long as they are not too great, can be adapted to by fish, but violent fluctuations are always lethal. In acid conditions metals such as copper are more easily dissolved and are more toxic; in alkaline conditions, ammonia becomes toxic as it changes its molecular state. The smaller a container of water is, the less it takes to influence the pH and

this is where aquarists need to beware. pH indicator paper is probably the easiest way to measure pH and identify unwanted swings.

### 3. Temperature

As nearly all fish are completely cold-blooded, they reflect accurately the temperature of the water around them. As this changes, so do they. So does their metabolism. Part of their metabolism is concerned with immunity. Lowering the environmental temperature depresses the fishes' immune response and lowers their resistance to disease. However, lower temperatures also slow down the development and reproduction of parasites. Many temperate water fish (such as the carp), actually switch off their immune response in winter temperatures. Fortunately, pathogens are 'turned off' at the same time. However, in spring, if temperatures rise quickly, the pathogens, being

much smaller 'turn on' to growth and reproduction before the fish develop immunological competence. The spring problems experienced in many carp farms is a direct result of this occurrence. Similarly fishkeepers may experience the same sort of problems in their coldwater tanks.

Too high a temperature is also lethal. Although most fish have a range of suitable temperatures that extends over 15-20°C, if the temperature rise is too sudden (more than 2°C per day) they experience an equivalent of fever. Some enzyme systems begin to break down and bacteria in the gut and on the skin, instead of being helpful or neutral to the fish, start to become pathogenic.

However, having said all this, temperature elevation is often a prerequisite of breeding, but it must be done consistently and fairly slowly.

The three factors mentioned, although the most common causes of problems, are in no way exhaustive. However, most other water quality changes are related to one or more of these three. Future articles in the series will refer to some of these others as they all interact with the pathogens' success and hence with the disease outbreaks.

Comparative table of centigrade and fahrenheit: 5°C (41°F) 15-20°C (59-68°F) 20°C (68°F) 2°C (4°F)

## OSCAR



## Press Release



### Two Major Awards in the same year

WORTH the country's two top fishkeeping awards to his credit this year, Tommy Stansfield believes he can achieve still more success in 1984 with his victorious *cichlasoma syniptilum*.

Tommy's fish won the prestigious Champion of Champions award at the recent British Aquarist Festival at Belle Vue, Manchester. The same fish had won him the top Fish of Fishes award at the Yorkshire Aquarist Festival at Doncaster.

Tommy becomes the first aquarist to win both titles in the same year, and it is now his ambition to keep his winning streak going and repeat his double victory.

"The fish is still in good condition so I hope to keep on winning and I'll try to win both titles again," said Tommy, of 7 Teall Court, Ossett, West Yorkshire.

Rightly nicknamed 'Beauty', Tommy's award-winning fish—now 10 in. long—is fed on a mixture of live food and King British Tropical Flake. Tommy originally bought the fish from

Keith Barraclough Aquarist Limited, aquatic shop and sister company of King British, of Haycliffe Lane, Bradford.

Tommy has a fish house of 18 tanks and a 5 ft. show tank in his home. He keeps mainly cichlids and catfish, and they are all fed on King British Tropical Flake. "It really brings out the colour in the fish, and they like the large flake", said Tommy.

Tommy (37) and his wife Eileen have two children, Amanda (16) and Robert (12).

For further information please contact: Keith Barraclough 0274 576241 or Bob Rushton 01-404 5575.

### New aquarium backgrounds from Interpet

INTERPET's new aquarium backgrounds depict only perfect show specimens of plants. This has been achieved by using Plantastics and Plantastic Foreground plants as models. The result—a beautiful display to grace the back of any aquarium.

Interpet Aquarium Backgrounds come in two sizes:

Code 1770—100cm long, and  
Code 1771—70cm long.

Guidelines are given on the back of the backgrounds indicating how to cut for different size aquariums.

These British-made backgrounds are available from Interpet Ltd, Curtis Road, Dorking, Surrey RH4 1DP. Telephone: (0306) 883202. Telex: 859115 Carin G.

### New popular fish treatment guide

INTERPET has just produced a guide, which enable the average fishkeeper to recognise and treat all common aquarium fish diseases.

This consists of an A3 sheet with diagrams depicting the various diseases and details of symptoms and the probable troubles, together with details of which remedies can be used to overcome the problem.

Another useful part of the chart indicates when products can or cannot be used.

For further details, please contact Sandra J Hasdell, Interpet Ltd, Curtis Road, Dorking, Surrey RH4 1DP. Tel. (0306) 883202. Telex: 859115 Carin G.

### The Marine Aquarium Manual

By Maurice Melzak

A MUST for beginners and long-time enthusiasts, *The Marine Aquarium Manual* is the first really practical guide to the marine aquarium. Wide-ranging in appeal and unrivalled in its field, this book will prove a useful handbook for the first time marine aquarist and for those wishing to take their interests further.

The author provides a comprehensive step-by-step explanation of the setting-up, stocking and maintaining of



marine aquaria and advice is given concerning the equipment required, including tanks and their construction, pumps and filters and methods of temperature control. Included are descriptions of the rich variety of natural life suitable for marine aquaria and information fundamental to an understanding of the shoreline's ecology, covering both temperate and tropical conditions.

Maurice Meltak, himself a qualified marine biologist, has kept marine aquaria for many years and is well-placed to impart his knowledge and experience to those who share his interest in this field. His book will be welcomed by teachers, students and aquarists alike, as well as those simply interested in life along the shoreline.

Publication date: 24th November 1983, price: £7.95.

### New Multi Purpose Thermometer

ELECTRONIC Temperature Instruments introduce the new all electronic miniature multi purpose thermometer. The new Thermotron has two unique features, price and size. At £24.95 it is half the price of the majority of its competitors and is 82 mm x 63 mm x 23 mm in size.

By design this electronic instrument

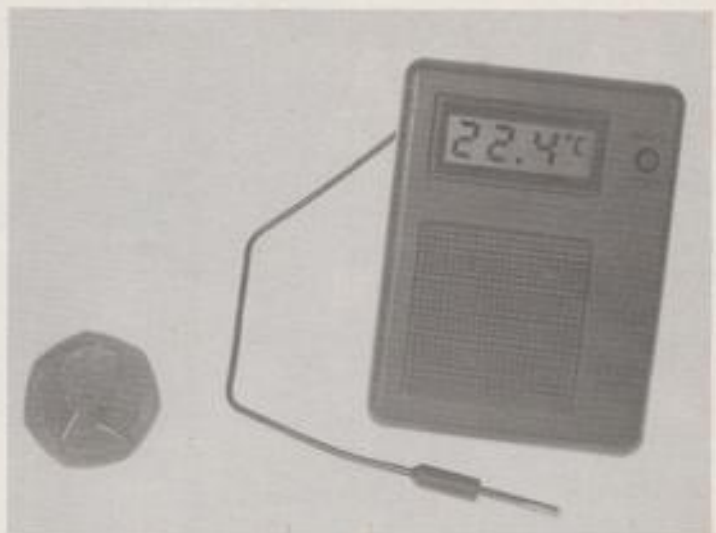
is the ideal alternative for the glass thermometer for both liquid and air temperature measurement. Its advantages include its easy to read liquid crystal display, long battery life and its waterproof and non corroding sensor. The high impact ABS case is supplied complete with built in wall mounting bracket and table top stand making it truly versatile.

This high precision electronic thermometer can measure 0-99°C with an

accuracy of 0.1°C.

The Thermotron is particularly well suited for measuring exact temperatures of air, liquids and semi solids in the following areas of industry: Laboratories, process and production, plant and maintenance, heating and ventilating, health and safety.

For further information please contact: Miss C. Dorricott, ETI, Highdown Avenue, Worthing, Sussex. Tel: 0903 692161.



### Nimrod 4 from Armitage Bros.

THE phenomenal success of the Nimrod 3 airpump with double outlet and adjustable control, has led to the introduction of the Nimrod 4.

The Nimrod 4 is an airpump with single outlet, and like the Nimrod 3 has adjustable airflow control. The adjustable feature makes it simple for the aquarist to alter the airflow in the tank as and when required. It is very economical to run.

The carton follows the attractive design established for the 'Nimrod' range, and in its silver and pink box will be ideal for shelf or window displays.

The pump is competitively priced and has a suggested retail of £7.25.

Full marks to the trade!

# THE ATLANTIC WRASSES

by  
Dr. R. J. Goldstein



THE family Labridae (wrasse) occurs around the world in subtropical to temperate coastal waters, usually occurring over coral or rocky bottoms but sometimes grass beds or sand, and occupying depths from the shoreline to the shelf edge. They are daytime feeders, diving under the sand or gravel at night or when attacked. Most wrasses are easily recognised by how they swim, using their pectoral fins to pump violently and pulling themselves along in a constant series of erratic jerks. When alarmed or pursued, however, they flex their bodies like most other fishes, and at these times are capable of amazing bursts of speed, often ending the burst in an instantaneous dive under the sand too fast for the eye to follow. For this reason, collectors seldom pursue them, relying instead on fish traps that appeal to the wrasse's unending appetite and curiosity. While hard bottom wrasses can be caught in lift nets or minnow traps, grass flat fish can be taken by hauling a large seine rapidly toward shore, the bottom well forward.

Up close, a wrasse is characterised by protruding buck canine teeth that seem too large for its thick-lipped but small mouth. Under the microscope, the only other teeth to be found are some side teeth right behind the canines, and they rather reduced and fused at their bases. The scales are cycloid rather than fringed, and the lateral line is often

Spanish hogfish, *Bodianus rufus* is a popular aquarium fish sporting a rich combination of blue and yellow, and a litling swimming pattern

angulated and sometimes interrupted.

Most wrasses are carnivorous, and the young of some of them, including the bluehead, Spanish and Cuban hogfishes, may be parasite pickers at times, resembling the Atlantic neon goby and the Indo-Pacific cleaner wrasses in this curious behavioural trait.

Worldwide, there are about 400 species of wrasses divided into some 60 genera. Along the Atlantic coast of the United States there are two abundant coldwater species (the tautog and cunner) and 19 subtropical species, only half of these reasonably common. Most of them make excellent aquarium fishes when kept as individuals with no close relatives, but tend to be aggressive toward their own kind, chasing competitors under the sand even during daylight hours. Two other Eastern Atlantic wrasses are noted.

There have been no aquarium spawning of wrasses, but it should be an attainable goal. Wrasse are egg scatterers, and may breed in two different modes. In the bluehead, for instance, most individuals breed freely in a community aggregation. There are some older, large fish that are invariably males, and these individuals always pair off

*Continued on page 34*



## THE ATLANTIC WRASSES

continued from page 32

with a single female for spawning. It is thought that many wrasses are protogynous hermaphrodites, going from immature to female, and finally to the male phase of the life cycle. How widespread this hermaphroditism and two-mode breeding system is among the wrasses is currently unknown. There is no reason, however, to believe that all wrasses mature and breed this way. Exceptions are known.

Wrasses are easily fed on animal fare, and should have a varied diet rich in invertebrates. None of them are believed to be fish eaters.

### Creole Wrasse

The creole wrasse, *Clepticus parrae*, is a midwater plankton feeder, mimicking the Pomacentrid, *Chromis cyanea* in colours and habits. Its brilliant violet to purple colouration and black fin edges make this one of the most beautiful of tropical marine fishes. The young are duller and have a series of dark blotches on the upper flanks. The specialised feeding habits of the creole wrasse can be met with a strong current and a food mix of krill (ocean plankton) and adult brine shrimp.

### Hogfishes

The four species of Atlantic hogfishes have a high number of dorsal spines, ranging from 12 to 14. Other wrasses have eight or nine spines. The hogfish species of the western North Atlantic are: hog snapper/hogfish *Lochnolaimus maximus*; red hogfish, *Decodon puellaris*; Spanish hogfish, *Bodianus rufus*; and Cuban/spotfin hogfish, *Bodianus pulchellus*.

It's too bad the hogsnapper gets so big (over 20 pounds), because

adults are really pretty fish. These two-to-three foot slab-sided giants are commonly taken by hook-and-line fishermen, but are then discarded because of fear of food poisoning. Hogsnappers have three elongate front dorsal spines at all ages, and in adult fish the sides are light orange to pink metallic. The outlines of the fish above and on the fin edges are sharply set off in purplish black, and there is a short, midlateral streak of the same dark colour on the flank. The unattractive young are camouflage patterned in orange-brown and white, and sometimes appear in commercial shipments of marine fishes. Hogsnappers tend to move around widely over areas of rubble, feeding mostly on clams, snails and crabs.

The red hogfish is a deepwater species, rarely seen at depths of less than 300 feet. Dull red-brown saddle markings blotch its light coloured body, and rows of yellow dots adorn the sides. Attaining a length of 15 inches, the red hogfish is seldom encountered except by deep sea anglers fishing with small hooks for vermilion snappers on offshore reefs.

Spanish hogfish get up to two feet in length. The juveniles are popular aquarium fishes, brightly bicoloured with purple, dark red or blue tops above a yellow bottom section which varies from buttercup to deep gold. A dark blotch on the front of the dorsal fin is characteristic of this species. When young, it sometimes sets up a cleaning station and behaves as a parasite picker.

The Cuban or spotfin hogfish is much smaller, not exceeding nine inches. A deep water fish, it is popular with scuba collectors but rarely seen by snorkelers. The Cuban hogfish looks like a piece of peppermint on a yellow stick. The rear area is sulphur-yellow, and the remainder of the body rich red, the body split by a horizontal white swathe from the lower jaw to the yellow region. Young fish occasionally behave as parasite cleaners.

### Razorfishes

The razorfishes are the wrasses of the grasses, usually associated with dense, shoreline vegetation or a reasonable facsimile. The species are: dwarf wrasse, *Doratonotus megalopsis*; rosy razorfish, *Hemipteronotus martinicensis*; pearly razorfish, *Hemipteronotus novacula*; green razorfish, *Hemipteronotus splendens*; Ascension razorfish, *Hemipteronotus blanchardi*; eastern razorfish, *Hemipteronotus sanctaehelenae*.

The dwarf wrasse is a common inhabitant of turtle grass beds, but seldom noticed due to its small size (under three inches) and camouflage colouration of a bright green body peppered with light and multi-coloured spots. Its pointy snout separates it from the green razorfish.

The rosy or straight-tailed razorfish occurs at depths greater than 20 feet, and usually at around 50 feet over a bottom of marl or sand, where it may hide among beds of garden eels. An elongate fish of soft colours, it is not rare but seldom collected for the marine trade.

The large and beautiful pearly razorfish reaches a length of 15 inches, and has the typical blunt head of most razorfishes. Its flesh-coloured, pinkish body is adorned with striking red and blue fins, and the silvery pearl mark over the vent is characteristic of the species. Wide ranging as far north as South Carolina, and occurring very close to shore in shallow grass beds, the pearly razorfish lives in a rubble pile-marked burrow in nature, and spends a good deal of its time under the gravel even in aquaria. Very aggressive toward its own kind, it will drive competitors under the sand during daylight hours, eventually starving them to death.

Somewhat smaller is the green razorfish, the most common Caribbean member of this group of blunt-headed sand divers. Varying from pink to dark green with blue streaks, this is one species in which the sexes can be told apart. Males have a dark ocellus ringed with a bright colour and lying in a light area at the mid-side, whereas

females have no such mark. The green razorfish is not rare in shallow grass beds, where it lives in burrows and attains a length of six inches. Its burrow has no rubble outside.

Two razorfishes occur at islands of the eastern North Atlantic. The Ascension razorfish occurs only at Ascension Island, while the eastern razorfish occurs at both this island and at Saint Helena.

#### Bluehead

The bluehead is the only Atlantic member of its genus, but *Thalassoma bifasciatum* makes up for its taxonomic uniqueness with a dazzling array of colours and patterns and life styles. It is perhaps the most studied of Atlantic wrasses, and continues to provide surprises.

The bluehead ranges widely as far north as Florida on the mainland and Bermuda offshore. It is a common inhabitant of the deep offshore sponge rock reefs at the edge of the continental shelf off North Carolina, where many subtropical fishes reach their northern limit.

Most blueheads are not blue-headed. Typical fish are bright yellow above and silvery white below, with a solid or broken black band along the sides which may take the form of a series of square blotches. Schools of these one to three inch long, yellow-phase fish roam over and around coral rubble from the shoreline to all depths, fish of even this size often sexually mature. These ubiquitous schools place the yellow-phase bluehead among the most characteristic and abundant of inshore Atlantic fishes.

Yellow-phase fish spawn in aggregations of many individuals, but that is not the only way the species reproduces.

Certain individuals attain larger size, occasionally even up to six inches in length, lose the horizontal dark band and develop a collar. The body becomes blue-green, and the collar consists of two black encircling bands with a white band between them, located just behind the head. All blue-phase blueheads are male fish, and they spawn only as pairs, selecting a

yellow-phase (the only phase) female from the wide array available. The blue-phase supermales never participate in mass spawning, characteristic of yellow-phase fish. It is believed that these supermales are protogynous hermaphrodites, derived from large yellow-phase female fish. Blue-phase fish are aggressive toward one another in aquaria, are often old fish, and do not make good aquarium inhabitants for long. However, they are striking and easily captured in shallow water, and there are few Caribbean snorkelers who have not brought some home for their marine tanks.

All the remaining subtropical Atlantic wrasses are in *Halichoeres*.

#### Other wrasses

There are nine species of *Halichoeres* in the western North Atlantic. They provide a wide spectrum of colour changes during growth, and a variety of life styles. Some form harems of a male and many females, while others roam widely mating with any fish they happen to meet. The confusion attendant upon their colour phases alone long held back any clear understanding of their taxonomy, and it is difficult even today for any but the most expert and experienced divers to recognise a majority of the species. The different kinds are: *Halichoeres bathyphilus*, greenband wrasse; *Halichoeres bivittatus*, slippery dick; *Halichoeres caudalis*, painted wrasse; *Halichoeres cyanocephalus*, yellowcheek wrasse; *Halichoeres garnoti*, yellowhead wrasse; *Halichoeres maculipinna*, clown wrasse; *Halichoeres pictus*, rainbow wrasse; *Halichoeres poeyi*, blackear wrasse; *Halichoeres radiatus*, puddingwife.

The greenband wrasse is, as its scientific name suggests, a fish of deep water and thus not seen in the marine fish trade. Known from Florida and Bermuda, it is recognised by its doubly indented tail fin, a black or blue patch on the shoulder, a small dark spot at the base of the tail, and a yellow-green

band running from the snout to the eye, thereafter splitting in two. The upper arm of this band runs quickly to the nape, while the lower arm continues along the entire side in an irregular fashion. The fins are blue and yellow, and the fish attains a size of about six inches.

The slippery dick is as common as the greenband is rare. Known from North Carolina to Brazil, it occurs offshore in deep water and along the shoreline in grassy or rubble-strewn shallows, where it is frequently among the most abundant of local species. Young fish are plain white with two dark, horizontal stripes. Adults are pale green with pale pink and light blue highlights, and much softened, even faded, lateral stripes. Well-known to Florida shore fishermen, it readily takes a baited hook. One of the best known of Atlantic wrasses, its lack of strong colours or striking pattern have excluded it from the marine tropical aquarium fish trade, although aquarists on vacation often collect specimens.

A rare, deepwater form is the lovely painted wrasse from the central Gulf of Mexico. Marked by a blue-ringed green ocellus behind the eye and an aquamarine body, darker below, it is further overlaid with neon streaks about the head. This six inch fish is too difficult to collect from depths, and has a restricted range in any case.

The yellowcheek wrasse is also a rare, deepwater form. Marked by a broad, dark band on a yellow-green body it, too, attains a size of six inches. It may occur rather widely, but deepwater areas have not been thoroughly explored anywhere, new records constantly appearing from the Flower Gardens of the Gulf of Mexico and the deep, sponge-encrusted rocky outcrops at the edge of the continental shelf off North Carolina.

The yellowhead wrasse is an abundant species, occurring principally inshore and on shallow offshore reefs. Young are bright tangerine coloured, with a thin neon blue line running from the eye to the tail. Older fish lose the blue



stripe and become darker and duller reddish. Large individuals are striking, and reminiscent of terminal phase giant bluehead males, in pattern more than colouration. The entire head is yellow, the body green, and the belly blue or white. A black vertical band separates the yellow and green body segments, and continues onto the back and the rounded tail. The yellowhead wrasse is also a more robust fish than the bluehead, and a great deal of colour variation is known. While most terminal phase fish are males, not all are. Females have been found, and colouration appears to be size, rather than sex related. All smaller fish are females, maleness occurring by sex reversal some time after maturity, if at all. Six to seven inches is top length.

Similarity between this fish and blueheads should not be expected, as they spawn differently. While blueheads go through either group or pair spawning, depending on phase, the yellowhead and all other members of the Atlantic species of *Halichoeres* undergo only pair spawning; group spawning is unknown from these fish.

The clown wrasse is the dwarf of this genus in the western North Atlantic, seldom exceeding four to five inches in length. White-bellied, black striped young are abundant inshore, particularly in the tropics, but the fish is wide ranging northward to North Carolina. Very large specimens are greenish, with pink or yellow small, wavy bands over the head and body, often edged thinly in blue. A black spot occurs in the dorsal fin in fish of all ages, while terminal colour phase fish have an additional black spot above the vent, in the same place that the pearly razorfish has a silver spot. It probably plays a sexual role in some wrasses, as it is common in the group.

The rainbow wrasse (sometimes called painted wrasse, depending on which book you pick up) is a reef species not found very close inshore, and not very common. It

swims well off the bottom, although it can be collected there with a baited hoop net. Young are white with two light brown stripes, but terminal phase fish can be striking. Not very large, even at this late stage, the rainbow wrasse may be a beautiful dark blue-green, with a bright pink-red streak along the base of the spiny dorsal fin. A black tail spot and yellow tail streak round out the striking colour and pattern.

The blackear is among the commonest of inshore wrasses, frequenting shallow seagrass beds from Florida throughout the Caribbean, and extending also into rocky or rubble areas in the shore zone. The largest specimens have a group of three blue-edged red stripes on the tail fin, characteristic of the species. An abundant fish, it is seldom noticed due to its occurrence in grass flats and camouflage colouration. The common name refers to a small spot just behind and above the eye.

Reasonably common and so distinctive as to be unmistakable, the puddingwife is both a familiar inshore fish to Florida swimmers and a common marine aquarium fish in the hobby. The brightly patterned young are characterised



Slippery Dick, *Halichoeres bivittatus* is among the most abundant and wide-ranging of western Atlantic wrasses

by a yellowish body, overlaid with white blotches and stripes and boldly punctuated with two or three black blotches. The blotches occur on mid-back, the rear of the mid-back and the upper side of the base of the tail. White vertical streaks on the back run down to meet white horizontal lines along the flanks, and sometimes expand out into bold white blotches along the entire upper half of the fish. The broken black and white and yellow combination is very noticeable when swimming in shallow rubble zones or over shoreline patch reefs, making the young conspicuous inhabitants of the inshore zone. They also occur farther offshore, as do the very large adults. The terminal phase fish may be entirely green, spotted and dappled with blue and pink, and the tail



Pearly razorfish, *Hemipteronotus novacula* was collected by the author in a beach seine at Panama City, Florida in four feet of water and a grass bed.

Bluehead Wrasse, *Thalassoma bifasciatum* Supermale



Bluehead Wrasse, yellow phase

may have a thin yellow edge. Growing to 20 inches, the puddingwife is the largest member of its genus in the western North Atlantic (the genus occurs in the Indo-Pacific as well), and joins the hogfishes of the area as being among the largest tropical wrasses in this region.

#### Tautog and Cunner

The tautog (*Tautoga onitis*) and Cunner (*Tautoglabrus adspersus*) are cold water wrasses occurring from North Carolina northward to the Gulf of Maine. They are not considered even as coldwater aqua-

rium fishes, although the tautog is highly regarded for food and sport.

#### British Wrasses

The wrasses of England are well-known to local fishermen and people who frequent the rocky shores. In particular, *Crenilabrus melops*, *Ctenolabrus rupestris* and *Centrolabrus exoletus* have recently been verified as parasite pickers. There is some evidence that a black spot at the base of the tail in these wrasses, or black horizontal lines along the body, serve as signals to resident fishes that these wrasses will clean them of parasites. How well understand this poster colouration language is among fish-eating predators is largely unknown, for

not all predators eat all the time, nor do they tend to prefer non-schooling fishes.

#### Other reading

For those interested in the biology and distribution of wrasses, as well as their social behaviour, there are several sources other than the standard books with which we are all familiar. Some of these are:  
 G. W. Potts, 1973. 'Cleaning symbiosis among British fish with special reference to *Crenilabrus melops*.' *Journal of the Marine Biological Association of the U.K.*, volume 53, pages 1-10.  
 J. E. Randall, 1965. 'A review of the razorfish genus *Hemipteronotus* of the Atlantic Ocean.' *Copeia* 1965, pages 487-561.  
 M. J. Roede, 1972. 'Colour as related to size, sex and behaviour in seven Caribbean labrid fish species. Studies on the Fauna of Curacao and other Caribbean Islands, No. 138, volume 42, pages 1-264 + plates.  
 1973. Reversal of sex in several labrid fish species. *Pubblicazione Stazione Zoologica Napoli*, volume 39, suppl., pages 595-617.  
 R. E. Thresher, 1979. 'Social behaviour and ecology of two sympatric wrasses off the coast of Florida.' *Marine Biology*, volume 53, pages 161-172.



# BAF 1983

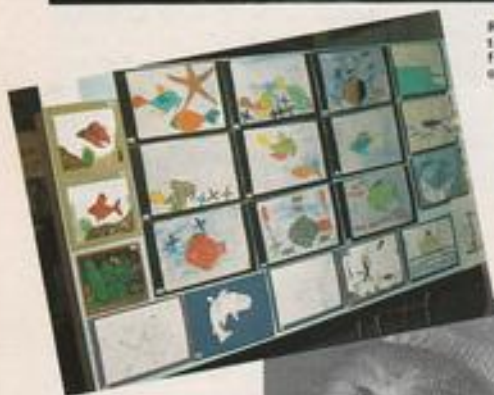
Fireworks from  
Darwen A.S.



Below: This  
Caledonian Canal  
tableaux from  
Bridgewater A. S.  
was placed second



Right: Third prize  
to Preston A. S.  
for this House  
of Cards



Above: Childrens  
Paintings, 8-11 years

Right: Champion of  
Champions (*Cichlasoma  
synapium*)



Presentation of  
Best Fish in Show  
trophy by Cliff  
Walker

Full report on page 45

# BAF 1983

ANOTHER BAF is over. Thirty two have now been staged, growing in physical dimensions during the first and second decade and then changing as times and the financial climate altered. Unchanging is the fervant enthusiasm of those who give many hours of their time to the ramifications of organising such a show.

This year has seen a huge increase in the number of traders and the size of their stands. There has been a simultaneous reduction in the size of the tableaux, a result of rising costs, but the ingenuity of design remains undiminished.

Bridgwater Aquarist Society is expected, always, to produce a novel tableau and did not disappoint us this year with their Caledonian Canal, a landscape of mixed endeavours from Caber tossing to Haggis farming with animated figures such as hopping haggises, nodding Highland cattle and cavorting Scots, sporrans skimbo. Centrally two Scots fishing from a boat were suddenly elevated upon the head of a surfacing Nessie, the while pipes skirled an accompaniment.

However, Bridgwater was pipped—just—at the post by Darwen's tableau which comprised a firework box adorned on top with Rainbow Rockets, Firemouth Fountains, Butterfly Bangers etc. But more was to come within if one peered in on a small township by night with but the glow from cottage windows and the glint of a little train to catch the eye until, in the background, rockets streaked across the sky and cascaded down in multicolours, a symphonic accompaniment of firework sounds adding further realism.

Halifax Aquarist Society kept to their customary neat, box-shaped tableaux, excelling with their show tanks by securing first, second and third awards for Best Individual Furnished Tropical Aquarium and first, second and third for Plants.

The Champion of Champions competition contained a heavy proportion of cichlids and catfish, the winner being Mr. T. Stansfield of the S.J.S.A.S. with his *Cichlasoma synspilum*.

The Best Fish in Show was a catfish, *Orinoco eigenmanni*, a splendid but retiring specimen not moved to display for the photographer, regrettably.

Granada Television sent a camera crew and coverage of the show's exhibits and exhibitors was broadcast that same evening.

It is always impossible to assess the number of visitors filling the exhibition

hall at any given time and comparison with earlier years is difficult because of the varying amount of floor space occupied by traders' and exhibitors' stands but on Sunday the crowds were so tightly packed that it was impossible to move other than by allowing oneself to be carried with the slowly moving surge of the throng. An hour before the end of the show people were still queuing for admittance. In consequence of the huge attendance there is talk of taking additional floor space in an adjoining hall next year and that can't be bad.

Lectures were delivered by Dr. C. Andrews of Tetra and by Dr. Vivian De Thabrew of Suhada on both Saturday and Sunday and it is understood that attendances were most gratifying.

This year's attendance figures for the show must smash all records but if they are to be exceeded next year more floor space is essential. So in 1984, let's have more floor!

Mr. John Hall, B.A.F. organiser, and his team of colleagues are to be congratulated on their achievement in producing what is justifiably claimed to be Europe's largest Aquarists' Show.

**Stop Press:** Report now available that more than 14,000 visitors attended the festival.

## British Aquarists Festival

# Champion of Champions

## Competition Results



**1st**  
T. Stansfield  
*Cichlasoma synspilum*  
SJS A.S.

**2nd**  
Mr & Mrs H. Cooper  
*Aulonocara nyassae*  
Bury & D.A.S.

**3rd**  
W. A. Knight  
*Cichlasoma citrinellum*  
Havant A.S.



A group of judges responsible for the following conclusions!



## Results of other Festival Competitions

**Highest Pointed Tableaux** (Harry Penhall Memorial Trophy): 1, Darwen A.S.; 2, Bridgwater A.S.; 3, Preston A.S.; 4, Oldham A.S.; 5, Workington A.S. **Best Fish in Show:** P. A. Moye, Basingstoke A.S. **Highest Pointed Furnished Aquarium (Society):** Runcorn A.S. **Highest Pointed Furnished Aquarium (Individual):** D. Shields, Halifax A.S. **Best Pair Fish** (Bill Kelly Memorial Trophy): A. Bibby, Sandgrounders A.S. **Highest Pointed Aquascape:** Mr. and Mrs. Stevenson, Oldham A.S. **Highest Pointed Novelty Aquascape:** Mr. and Mrs. Stevenson, Oldham A.S. **Highest Pointed Breeders Team:** C. Sykes, C.A.G.B. **Best Tropical Fish** (Withy Grove Press Trophy): P. Moye, Basingstoke A.S. **Best Coldwater Fish** (Belle Vue Challenge Trophy): A. and E. Berry, Bridgwater A.S. **Exhibitor with most Awards** (John East Memorial Challenge Trophy): P. A. Moye, Basingstoke A.S. **Tropical Furnished Aquarium (Society)** (Cussons Silver Challenge Trophy): 1, Halifax A.S.; 2, Darwen A.S.; 3, C.A.G.B. **Coldwater Furnished Aquarium (Society):** 1, Runcorn A.S.; 2, Halifax A.S.; 3, Accrington A.S. **Tropical Furnished Aquarium (Individual)** (Walter Smith Coronation Shield): 1, D. Shields, Halifax A.S.; 2, P. Gibbins, Halifax A.S.; 3, D. Fryer, Halifax A.S. **Coldwater Furnished Aquarium (Individual)** (The Hammond Trophy): D. Shields, Halifax A.S. **Marine Furnished Aquarium (Individual)** (F.N.A.S. Marine Trophy): 1, J. Dean, St. Helens A.S.; 2, B. Leyland, St. Helens A.S.; 3, Mr. and Mrs. Robinson, Stretford A.S. **Furnished Aquascape** (Aquarist and Pondkeeper Silver Cup): Mr. and Mrs. Stevenson, Oldham A.S. **Novelty Aquascape** (James Kelly Trophy): 1, Mr. and Mrs. Stevenson, Oldham A.S.; 2, N. Lowley, Calverley A.S.; 3, R. Muckle, Runcorn A.S. **Plants** (F.N.A.S. Shield): 1, P. Swales, Halifax A.S.;

2, D. Shields, Halifax A.S.; 3, D. Shields, Halifax A.S. **Common Goldfish and Comets:** 1, A. and S. Berry, Bridgwater A.S.; 2, W. A. Knight, Basingstoke A.S.; 3, Mr. and Mrs. Colley, Oldham A.S. **Shubunkins** (Bristol/London) (G.S.G.B. Silver Cup): 1, Mr. and Mrs. Silk, S.J.S. A.S.; 2, R. and D. Parr, Oldham A.S.; 3, A. and S. Berry, Bridgwater A.S. **Moors and Veiltails** (Walter Smith Challenge Trophy): 1, P. Ward, Workington A.S.; 2, S. Norris, Bracknell A.S. **Fancy Goldfish** (The Chester Cup): 1, C. Wallbank, Accrington A.S.; 2, J. Turner, Accrington A.S.; 3, Mr. and Mrs. Silk, S.J.S. A.S. **A.O.V. Coldwater** (The Derby Cup): 1, S. Walsh, Accrington A.S.; 2, A. Littlewood, Darfield A.S.; 3, A. and S. Berry, Bridgwater A.S. **A.V. Coldwater (Pairs)** (The Nottingham Challenge Shield): 1, Mr. and Mrs. Silk, S.J.S. A.S.; 2, A. and S. Berry, Bridgwater A.S.; 3, F. Foote, Accrington A.S. **Coldwater Breeders A.V. (Single Tail)** (Edgar Chapman Memorial Trophy): 1, A. and E. Berry, Bridgwater A.S.; 2, Mr. and Mrs. Chadwick, Oldham A.S.; 3, Mr. and Mrs. Silk, S.J.S. A.S. **Livebearers Section** (Lewis Trophy): **Guppy:** 1, D. Brightmore, Stretford A.S.; 2, K. Buckley, Bridgwater A.S.; 3, M. Adair, Workington A.S. **Molly:** 1, Mr. and Mrs. Marshall, Merseyside A.S.; 2, K. Hoey, Stretford A.S.; 3, J. Jones, St. Helens A.S. **Platy:** 1, Mr. and Mrs. Marshall, Merseyside A.S.; 2, A. Armstrong, Workington A.S.; 3, J. and S. Cresswell, Preston A.S. **Swordtail:** 1, Mr. and Mrs. Marshall, Merseyside A.S.; 2, A. and D. Berry, Bridgwater A.S.; 3, J. T. Graham, Workington A.S. **A.O.V. Livebearer:** 1, M. Strange, Basingstoke A.S.; 2, P. A. Moye, Basingstoke A.S.; 3, Mr. and Mrs. Maloney, Merseyside A.S. **A.V. Livebearer (Pairs)** (Frazer Brunner Silver Cup): 1, P. A. Moye, Basingstoke A.S.; 2, A. and E. Berry, Bridgwater A.S.; 3, A.

Armstrong, Workington A.S. **Rift Valley and Lake Cichlids** (F.N.A.S. Trophy): 1, Mr. and Mrs. Eatough, Sandgrounders A.S.; 2, Mr. and Mrs. Eatough, Sandgrounders A.S.; 3, R. Free, Bridgwater A.S. **Dwarf Cichlids A.V.:** 1, Mr. and Mrs. Silk, S.J.S. A.S.; 2, Mr. and Mrs. B. Walsh, Darwen A.S.; 3, E. Oates, Preston A.S. **Large Cichlids A.V.:** 1, W. A. Knight, Basingstoke A.S.; 2, P. J. and A. Kelly, Preston A.S.; 3, G. Hoey, Stretford A.S. **A.V. Cichlids (Pairs)** (National Aquarist Society Cup): 1, P. A. Moye, Basingstoke A.S.; 2, D. A. Gow, Darwen A.S.; 3, G. Shaw, Runcorn A.S. **Siamese Fighters** (The East Lancashire Society Trustees Trophy): 1, Mrs. Gregory, Darwen A.S.; 2, Mr. and Mrs. H. Jones, Lakeland A.S.; 3, Mr. and Mrs. H. Jones, Lakeland A.S. **Small Anabantids:** 1, J. Lynch, Merseyside A.S.; 2, Mr. and Mrs. Baldwin, Sandgrounders A.S.; 3, N. Lowley, Calverley A.S. **Large Anabantids:** 1, P. A. Moye, Basingstoke A.S.; 2, T. A. Cruickshank, C.A.G.B.; 3, Mr. and Mrs. Baldwin, Sandgrounders A.S. **A.V. Anabantids (Pairs)** (F.N.A.S. Silver Challenge Trophy): 1, Mr. and Mrs. K. Robinson, Stretford A.S.; 2, E. and B. Calow, Bridgwater A.S.; 3, Mr. and Mrs. Baldwin, Sandgrounders A.S. **Small Barbs** (F.N.A.S. Trophy): 1, D. Cruickshank, C.A.G.B.; 2, D. Cruickshank, C.A.G.B.; 3, E. R. Walker, Merseyside A.S. **Large Barbs:** 1, P. A. Moye, Basingstoke A.S.; 2, R. Whittaker, Sandgrounders A.S.; 3, Mrs. Winstanley, Runcorn A.S. **A.V. Barbs (Pairs)** (Aquarist and Pondkeeper Silver Cup): 1, J. Graham and P. Briscoe, Workington A.S.; 2, P. A. Moye, Basingstoke A.S.; 3, D. Cruickshank, C.A.G.B. **Small Characins** (F.N.A.S. Trophy): 1, E. and B. Calow, Bridgwater A.S.; 2, P. A. Moye, Basingstoke A.S.;

*Continued on page 47*





# SPOTLIGHT

## The CONGO TETRA

A LOT of different characins are native to Central Africa, though a far, far greater number of them have their natural home in the New World (Central and South America), with the exception of the Pacific slope of Chile and the climatically unsuited regions thereabouts. Interestingly, one New World characin occurs in the U.S.A. This is a subspecies of a fish which strayed northwards aeons ago from Mexico. *Astyanax fasciatus mexicanus* is its name, and it swims in the Rio Grande system in Texas.

As early as 1899, the Congo Tetra or Congo Salmon, was described for science by G. A. Boulenger. Nonetheless it did not show up in dealers' tanks until as late as 1949. Up to quite recently the technical name of *Micralestes interruptus* was used for this fish but *Phenacogrammus interruptus* is its correct label when writing about it or talking about it formally. So Dr. Jacques Géry tells us in his monumental work entitled *Characoids of the World* (T. F. H. Publications, Inc. Ltd, U.S.A.).

From all accounts *P. interruptus* is extensively found in the Zaire (Congo) river, which extends for about 3,000 miles and, presumably some, if not all, its tributary streams.

The species is elongate in shape, compressed, and variable in coloration which is, I suspect, to be expected in a species distributed over a wide geographic range. In general, then, the back is brown to black shading through tones of

by  
**Jack Hems**

green or greeny blue to silver, overcast with pale lemon yellow on the belly. A gold band or stripe stretches from the conspicuous black eye to the root of the tail. The scales are large and, caught in a strong light, reflect myriad tints beautiful beyond words.

All but the pectoral fins are grey with paler grey to white margins. The long-based anal fin is set well back. The dorsal fin is well developed and the posterior rays curve gracefully over the tab-like adipose fin and caudal peduncle. They are dark coloured. The caudal fin of both sexes is most distinctive. The middle rays grow out from the centre of the membrane, from the bifurcation of the twin lobes to be precise, and form black feathery appendages. This curiosity of finnage is more pronounced in the male than in the female. It is interesting to note, also, that these feathery-looking appendages renew themselves as ageing withers them, or they come in for damage. Although the mouth is small it is well-equipped with minute teeth capable of seizing and holding swallowable fry or wildly lashing larvae.

*P. interruptus* makes a remarkably attractive community fish, provided no much smaller fishes or easily intimidated fishes are included in the set up: for a reluctance to bully

is not among its virtues. It is a shoaling fish and several Congo Tetras placed together in a tank move about the tank in a group.

*P. interruptus* readily eats dried foods, though to keep the fish in vigorous condition a large proportion of its food should be made up of flesh (shredded raw red meat or uncooked white fish) and living creatures such as *Daphnia*, white-worms and the rest. A temperature in the middle to low eighties (°F) suits the fish very well. Another matter of some importance is the quality of the water they are given to live in. Water that is soft and slightly acidic is recommended.

The Congo Tetra is not one of the readiest of breeders. For all that, a sufficiency of the right sort of food (flesh and live), a well-lighted aquarium of not less than 15 gal. capacity, plenty of lacey-foliaged plants such as Indian Fern (*Ceratopteris thalictroides*), *Myriophyllum*, and the like, and a temperature in the upper seventies (°F) may well prove aphrodisiacal in their effect.

There is no involved courtship as in labyrinth fish or, say, cichlids but the enrichment of colours and a lot of dashing about at all levels of the water may be taken as a preliminary to spawning. It is hardly necessary to emphasize that a female ripe for spawning shows swollen sides. The male is a persistent suitor and drives again and again into where the plants grow thickest. There eggs are released

# SPOTLIGHT



and fertilized. Spawning may be over in an hour or two or extend over a period of days. All depends, of course, on the size, age and ardour of the fish.

It is desirable to separate the spawned-out fish from the eggs when driving is over, or when either

one of the pair, or both, appear to be losing interest in the procreative act.

The eggs incubate within the space of a week. A few days after incubation is complete, the hatched fry become free-swimming. Newly hatched fry are quite large and soon develop an enormous appetite for tiny live food. Brine shrimps, large infusorians, and the like, are recommended for the first four or five days of their free-swimming existence. After this Grindal worms, chopped whiteworms, and the rest can be introduced into their diet. Alternatively the fry can

be fed on a mixture of finely shredded flesh food and dust-fine dried foods. The fry make rapid progress in clean and well-aerated water. Beyond making certain that these conditions are provided, there is nothing the aquarist can do but watch the fry grow.

A well-grown male *P. interruptus* may attain a length of 3½ in. A female may reach about 2½ in. Although at the present day the fish is popularly called the Congo Tetra or Congo Salmon, in earlier times it was commonly called the Rainbow Characin or the Feather Tail.



### "Alexis"—a magnificent Catfish

The reason for writing is in connection with my pride and joy, "Alexis the Magnificent" namely a Red tailed Catfish, *Phractocephalus hemiliopterus*, kept on his own in a 100 gallon tank originally bought from Allan Matson, of Ashford Aquatics at the Heathrow Garden Centre at Stanwell, Middlesex. I have been the proud owner for some seven months now and just recently have had some concern due to an unknown illness in the fish.

After a lot of telephone calls to Vets and fishkeepers the man who I feel deserves some recognition is David Sands, of Dee Bee Aquarium World Ltd., near Preston, Lancs.

I found that my water condition was not as good as it should be (pH wise mainly), also my filter medium was not as effective as it could be. Having spent some time talking to David Sands things have now been

sorted out and I am glad to say that "Alexis" is now on the road to recovery. Any more information will gladly be passed on and I hope that it is possible to have this letter printed in your excellent fish magazine. Being a regular reader myself, I would like to publicly thank David Sands for his valuable knowledge of this magnificent Catfish. "Alexis" is now some 18 inches long and I enclose a photograph of him.

A. J. Barton, Cambridge.

### Spiny Eels—a request and an offer!

I would be very grateful if the readers of the *Aquarist and Pondkeeper* could help me to trace a Spiny Eel which was bought by a gentleman at the Yorkshire Aquarist Festival on Saturday 20th August.

This fish was a brownish-yellow colour with darker, almost rectangular markings along its sides. It was a very long specimen, possibly 12 inches or more in length.

Unfortunately for me this fellow had bought it before I had noticed it in one of the tanks on the New Aquatic Nurseries Ltd. stand. I would therefore like to get in touch with this gentleman in a bid to try and identify

this Spiny Eel and possibly photograph it as I have been unable to identify it from memory.

If any other readers of your magazine have had trouble identifying their Spiny Eels I would be only too happy to make an attempt at doing this job for them. Should they wish this, then could they please send me as much information about their specimen as they possibly can, together with a photograph or slide (if possible, one I could keep. If not I would willingly return it) and an s.a.c.

I would be very interested to hear from other readers who have (or indeed who have kept) these fascinating fish, about their experiences with them.

I would also like to hear from anyone who would be interested in forming a specialist society to further the interest and knowledge of these fish, or on a wider basis, interest in all the fishes usually listed as "oddballs" as there is a great deal of information lacking on these species, and I am sure that a society on these grounds would be of great benefit to the aquarium hobby.

Again, if you could include this letter in your magazine I would be very grateful. Thank you.

D. J. Curran, 45 Phoenix Place,  
Newton Aycliffe, Co. Durham  
DL5 4QL.



# Champion of Champions

Continued from page 43

3, E. and B. Calow, Bridgwater A.S. **Large Characins**: 1, P. A. Moye, Basingstoke A.S.; 2, K. Buckley, Bridgwater A.S.; 3, D. T. Milner, Darwen A.S. **A.V. Characins (Pairs)** (East Lancashire Society Silver Cup): 1, E. and B. Calow, Bridgwater A.S.; 2, A. Buckley, Bury A.S.; 3, D. T. Milner, Darwen A.S. **Sharks and Foxes** (F.N.A.S. Trophy): 1, G. Wigglesworth, Darfield A.S.; 2, Mr. and Mrs. Baldwin, Sandgrounders A.S.; 3, T. A. Cruickshank, C.A.G.B. **Rasboras**: 1, Mr. and Mrs. Stevenson, Oldham A.S.; 2, K. Buckley, Bridgwater A.S.; 3, D. T. Milner, Darwen A.S. **Danio and Minnows**: 1, S. Jones, St. Helens A.S.; 2, Mr. and Mrs. Tonna, Bracknell A.S.; 3, E. and B. Calow, Bridgwater A.S. **A.V. Carp and Minnow (Pairs)** (The Warwick Shield): 1, B. Steadman, Runcorn A.S.; 2, K. Buckley, Bridgwater A.S.; 3, G. Yates, St. Helens A.S. **Corydoras and Brochis Catfish** (Stan Taylor Trophy): 1, T. A. Cruickshank, C.A.G.B.; 2, P. A. Moye, Basingstoke A.S.; 3, T. A. Cruickshank, C.A.G.B. **A.O.V. Catfish**: 1, P. A. Moye, Basingstoke A.S.; 2, Mrs. D. Cruickshank, C.A.G.B.; 3, J. T. Morris, Sandgrounders A.S. **A.V. Catfish (Pairs)** (The York Shield): 1, J. T. Morris, Sandgrounders A.S.; 2, E. R. Walker, Merseyside A.S.; 3, P. A. Moye, Basingstoke A.S. **Egglayers Tooth Carps** (F.N.A.S. Trophy): 1, S. Norris, Bracknell A.S.; 2, J. Roberts, Accrington A.S.; 3, D. Parkinson,

St. Helens A.S. **A.V. Egg-laying Tooth Carps (Pairs)** (F.N.A.S. Silver Challenge Trophy): 1, D. Parkinson, St. Helens A.S.; 2, J. Roberts, Accrington A.S.; 3, K. Buckley, Bridgwater A.S. **Louch** (F.N.A.S. Trophy): 1, Mr. and Mrs. Baldwin, Sandgrounders A.S.; 2, Mr. and Mrs. Baldwin, Sandgrounders, A.S.; 3, Mr. A. Bibby, Sandgrounders A.S. **A.V. Louch (Pairs)** (The Durham Silver Cup): 1, Mr. A. Bibby, Sandgrounders A.S.; 2, S. Norris, Bracknell A.S.; 3, Mr. and Mrs. Marshall, Merseyside A.S. **A.O.V. Tropical Fish** (F.N.A.S. Trophy): 1, B. Walsh, Darwen A.S.; 2, K. Hunter, Workington A.S.; 3, D. Phillips, Merseyside A.S. **Egg-layers Section (Individual)** (F.N.A.S. Breeders Trophy): **Breeders (1)**: 1, C. Sykes, C.A.G.B.; 2, T. Wheelwright, Halifax A.S.; 3, C. Sykes, C.A.G.B. **Breeders (2)**: 1, K. Buckley, Bridgwater A.S.; 2, K. Buckley, Bridgwater A.S.; 3, Mr. K. Hilton, Bury A.S. **Breeders (3)**: 1, D. T. Milner, Darwen A.S.; 2, D. T. Milner, Darwen A.S.; 3, Mr. and Mrs. Hulse, Oldham A.S. **Breeders (4)**: 1, Mr. and Mrs. Tonna, Bracknell A.S.; 2, Mr. and Mrs. Walsh, Darwen A.S.; 3, A. and E. Berry, Bridgwater A.S. **Live-bearers Section Breeders (1 and 2)** (F.N.A.S. Silver Challenge Trophy): 1, Mr. and Mrs. Tonna, Bracknell A.S.; 2, Mr. and Mrs. Silk, S.J.S. A.S. **Breeders (3 and 4)**: 1, K. Buckley, Bridgwater, A.S.; 2, D. T. Milner, Darwen A.S.; 3, M. Strange, Basingstoke A.S. **Reptiles (Non-Dangerous)** (Bob Tomlinson Trophy): 1, C. Bennett, Manchester Zoological A.S.; 2, R. Quinlan, Manchester Zoological A.S.; 3, R. Quinlan, Manchester Zoological A.S. **Amphibians (Non-Dangerous)**: 1, N. Lowley, Calverley A.S.; 2, Mr. and Mrs. Hodges, Bury A.S.; 3, B. Leyland, St. Helens A.S. **Individual Furnished Aquarium**: 1, P.

Gibbins, Halifax A.S.; 2, D. Brighthorpe, Stretford A.S.; 3, Mr. and Mrs. Moore, Stretford A.S. **Aquatic Painting (5-7 years)**: 1, K. Moore, Stretford A.S.; 2, D. Tonna, Bracknell A.S.; 3, H. Barnes, B.K.K.S. **Aquatic Painting (8-11 years)**: 1, P. J. Brightmore, Stretford A.S.; 2, R. Cater, St. Helens A.S.; 3, A. Meadowcroft, Darwen A.S. **Aquatic Painting (12-16 years)**: 1, M. Carter, St. Helens A.S.; 2, T. Jones, Manchester Zoological A.S.; 3, C. Tonna, Bracknell A.S. **Photographs (Fish)**: 1, P. Harris, St. Helens A.S.; 2, B. Leyland, St. Helens A.S.; 3, B. Leyland, St. Helens A.S. **Photographs (Furnished Aquaria)**: 1, C. Tonna, Bracknell A.S.; 2, H. Buckley, Northwich A.S.; 3, B. Leyland, St. Helens A.S. **Aquatic Handicraft (Senior)**: 1, B. Walsh, Darwen A.S.; 2, I. Benham, St. Helens A.S.; 3, B. W. Carter, St. Helens A.S. **Aquatic Handicraft (Junior)**: 1, L. Holden, Darwen A.S.; 2, D. Tonna, Bracknell A.S.; 3, A. Bogg, Darwen A.S.

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# WHAT IS YOUR OPINION?



by B. Whiteside.

B.A., A.C.P.

'Photographs by the Author'

HAPPY NEW YEAR! I hope it will bring peace, prosperity, health and happiness to all my readers. My thanks to those who sent me Christmas cards and good wishes. I regret that I do not have time to write replies to everyone who writes to me. If I took time to write replies I'd have no time left to write this feature.

Next month's issue of *The Aquarist* will have a special significance for me: in the February 1964 issue I had my first article published. If I recall correctly my first article was called *Aquarium Snails: Friend or Foe?* and contained one or two errors that sharp-eyed readers were quick to point out. I hope that readers will all drop me a letter to mark my 20 years. I'd be particularly interested to hear from anyone who has been reading the magazine for at least 20 years.

I began the October 1983 feature with a letter from Mr. Marjan Vidic, of Dobriška Ulica 1, 64248 Lesce, S.R. Slovenija, Yugoslavia. I've just received a picture postcard showing a most delightful view of Bled, Slovenija; and, needless to say, it's from Mr. Vidic. He writes: "In the magazine I got yesterday you published my letter. Many, many thanks. I hope I'll receive some letters from aquarists in England because I'd really like to make contact with other aquarists; I feel so lonely. I hope aquarists will read my

letter (that) you published and I expect voices from the island (*sic*). It'll be yours next! I'm very thankful to you. Later in the year I will write to you again and send you some photos of my successes and unsuccesses. Once again, Mr. Whiteside, thank you very much."

I hope readers will write to Mr. Vidic. He sounds rather isolated in his aquarium-keeping hobby.

I'm pleased to be able to include a letter from Mr. Norman McCracken, of 28 Greenmount Road, Coleraine, Co. Londonderry, Northern Ireland. He writes: "In your September column you asked for information about breeding goldfish. I bred goldfish last year (1982) and had approximately 300 young. One day, when the fry were about two months old, I tried a partial water change which, unfortunately, killed the whole lot. I suspect that there was too much chlorine in the water. I tried again this summer (1983) and was more successful. I started with only about 150 fish, which I was very glad about because I have only three spare tanks. I thinned them out gradually and now I have 42 very good, healthy goldfish. I fed the not-so-good fish to my terrapins—which were very pleased to get a change from raw meat, earthworms, cooked ham and pond pellets.

"I have six tanks—and a garden pond where the goldfish breed. All I did was bring eight plants inside and the eggs were on them. In my 20 ft. x 15 ft. pond—which slopes to 3 ft. deep at the centre—I have five common goldfish, three comets, two golden orfe, two koi, two tench and two bitterling. Around the pond I have heathers, lavenders, mimulus and primula plants, with the odd saxifrage. The pond is made of concrete.



Part of one of my planted tanks

"In the house I have three 24 in. x 12 in. x 12 in. goldfish tanks, one 48 in. terrapin tank and one 36 in. community tropical tank—with one left for quarantine. On the subject of terrapins: could you tell me how to sex them? I have five adult red-eared terrapins; and one stands out from all the others. Its tail is three or four times thicker, and its fore-leg nails are very, very long—up to about 1 in. in length. Could this be the way you tell the difference? Also, could you give me some information on how to breed them as my local library has nothing in that line?"

I've never kept terrapins, Norman, and know little about them; hence I'm unable to answer your questions. Someone borrowed and did not return my book about tortoises and terrapins—to mention but one of many of my books that people borrowed and did not return. Try asking your local librarian if he/she can obtain a book about terrapins for you.



Unidentified aquatic plant can you name it?

"I always enjoy your column in *The Aquarist*; long may you continue your contribution," writes 84-years-old Mr. R. H. Chaplin, of Street Farm Cottage, Park Street, Charlton, Malmesbury, Wiltshire. "I notice you have sought the thoughts of your readers on live foods—amongst other items. I trust that a copy of a letter I sent to Dr. C. Andrews may interest you. Could you encourage your editor to publish an article on this matter?"

"I am 84 years old and have been interested in fishkeeping since boyhood and would like to contact others so interested in the vicinity of this village—but can't think how to go



about it. The problem is aggravated by the fact that I can no longer drive my car. If I knew the address of a local aquarist society it might help—but the nearest I know of is Bristol, which is 30 miles away. Have you any suggestions?"

In his letter to Dr. Andrews, Mr. Chaplin stated that he had no difficulty in hatching brine shrimps in an airing cupboard at a temperature of 77°F. He went on to say that he then transferred the brine shrimp nauplii to a smaller container—of about 2 in. to 3 in. in diameter—using the same salt solution at the same temperature. Mr. Chaplin then added a drop or two of Mykrocell, as advised in the leaflet, and in a few hours all the nauplii were dead. He asked Dr. Andrews what he had done that was wrong.

I cannot advise Mr. Chaplin because I have not heard of Mykrocell. At 84, Mr. Chaplin must be one of our oldest readers. I hope that members of any aquarium clubs near him will endeavour to contact him and try to enable him to visit their clubs; and that aquarists who live in the area will make contact—even if just for a chat. If you have not yet made any new year resolutions why not consider some that would involve you in helping young or very old aquarists. The percentage of old people in the community is increasing quite quickly; and there are many jobless youngsters. If you are in a more fortunate situation please encourage the old and the young in the hobby by giving them practical assistance—whether it's a lift in your car to an aquarium club meeting; or simply slipping a spare heater or thermostat to someone who needs one and cannot afford it. If you are a competent electrician you could help by wiring up heaters, thermostats, etc.

Four Woolworths clear, 40 watt bulbs, in aquarium hoods, lasted 56, 133, 142 and 145 days. What brand of bulb do you recommend as providing good value for money and good plant growth when used to light aquaria? Photograph 1 shows some of my flourishing plants.

In the October 1983 *Aquarist* you



*Haplochromis multicolor*—the dwarf Egyptian mouthbrooder

may have read my *Meet the Aquarist* article about Jerzy Gawor and Andrew Stagg. I interviewed the two gentlemen and photographed them and their shop in 1981—which is when my article and photographs were submitted for possible publication. Obviously only one photograph was published, and a couple of years passed since I visited Jerzy and Andrew. Although AQUALITY Ltd. continues to flourish, the chaps have branched out into other fields involving our hobby and they no longer have enough time to publish their *AQUALITY Newsletter*—so please don't send for copies. Incidentally, the plants that I mentioned on page 31 as having been given to me by Andrew and Jerzy are alive and well and growing and reproducing very slowly in one of my tanks. I still have no idea what they are. Photograph 2 shows one of them. Can you identify it? Perhaps I should send a plant to Kew Gardens.

Mr. Peter Way is 18 years old and a neat writer. He lives at 15 Kneller Road, New Malden, Surrey, and writes: "I've finally got round to writing to you about some of my experiences in the hobby. A couple of months ago you asked for any

information or stories about weather loaches, *Migurima anguillicaudata*. I've had mine for three years and he's 8 in. long and quite a character. He is kept in a 48 in. x 18 in. x 15 in. tank with four kol—three of about 8 in. in length and one of 14 in. About a year ago, while watching television one evening, we heard a bang in the other room. I went to look—but found nothing. At about 11.30 p.m., when just about to get into bed, I heard a scream from downstairs. On descending the stairs I found my mum pointing at what looked like a hairy snake by the front door. It turned out to be my weather loach covered in carpet fluff. He must have jumped out of the tank, the bang earlier having been the sound of him hitting the hood, fallen onto the floor, and wriggled all the way up the hall—quite a distance.

"About 18 months ago I got a job serving at the Lynwood Fish House, 319 Hook Rise South, Tolworth, Surrey. I work there on Saturdays and Sundays. It is quite a large shop with a good range of aquatic goods, especially marines, and I really enjoy working there.

"Recently I have started keeping discus in a community set up with



Australian Rainbow

great success. The only things that I keep a special check on are pH and keeping the tank extra clean. I have six brown discus in a 48 in. tank and they have thrived in the 10 months I have had them. I would be interested to hear from anyone interested in the hobby who is about my age, 18.

"Finally, thank you for providing a useful magazine—if a little old-fashioned in format. Maybe you could visit the shop one weekend. Hope to see you." (Thank you for the kind invitation, Peter. As you may know, I do not live in England—although I make regular visits there. If you'd care to send me a little map, and details of distances and railway stations, I'll consider it on my next trip to London.)

Photograph 3 shows a dwarf Egyptian mouthbrooder, *Haplochromis multicolor*. Please drop me a few lines if you have bred this attractive, little fish—or any other mouthbrooders.

Fleetwinds, Lynch Road, Weymouth, Dorset, is the address of Ms Katrina Hurn, whose notepaper has a delightful drawing of two seals as a heading—which befits a self-employed artist who has plenty of time to tend her tanks and study her fish. She writes: "I have only been buying *The Aquarist* since July 1983. I'm 23 now and have been keeping fish since I was eight. Over the years I have kept a variety of fish. For the first 14 years I kept only

coldwater fish because it has taken me that long, together with a lot of reading, to persuade my mother that tropical freshwater fish are not more difficult to keep, and if I'm away for a weekend they will not die on her.

"With the restrictions imposed by coldwater fish only and with the clear knowledge myself of their high oxygen consumption, low waste tolerance, and the propensity of goldfish to grow and grow, I set about setting up a coldwater tank in my teens to improve on my previous goldfish which had graduated to a pond—where they still reside, in their teens themselves, with several generations of offspring. I knew of a local stream which was due to be tidied into underground, concrete tunnels so I didn't feel bad about going and extracting some of the denizens. I ended up with an interesting community tank containing two sticklebacks—I always have *Daphnia* in a garden tank, and loads of other live food available; I wouldn't recommend anyone to keep them otherwise—plus four stone loaches, a minnow—there seemed to be only one in the stream—and I added three bitterling, from a local pet shop, and two rudd, which grew, of course.

"The fish were very happy, it seems, with U/G filtration, and vigorous aeration. I had several species of coldwater, local plants—even water colts-

foot flowering once. I enclose a photograph of a stone loach, and a minnow that grew to a size of 5½ in. in four years. How long do they live and how long do they grow? After five years I released the remaining stickleback and loaches, the other stickleback, minnow and bitterling having died—from old age, I think. The rudd are huge and could do with a pond soon . . ." Unfortunately I do not have enough space to conclude Ms. Hurn's letter. I may manage to fit in the remainder next month. Ms. Hurn's two photographs were unusually good. She uses a Canon AV1 with Tamron SP 35-80mm. f2.8 zoom lens.

Photograph 4 shows an Australian rainbow, *Melanotaenia maccullochi*. Please send me details if you have kept and bred this species.

I should also like to have your opinions on: (a) breeding good guppies; (b) raising live foods; (c) feeding aquarium plants; (d) what lighting you use over your tanks and for how long you keep it on daily in winter; and (e) the piece of aquarium equipment that you consider to be most useful—other than heaters/stats, in general. Goodbye until next month.



THE SMALL family Diodontidae includes the porcupine or burrfishes. The porcupine fish from the genus *Diodon* is covered with long, double-based spines which stand out at right angles to the body when the fish inflates itself to an almost spherical shape. Thus inflated the fish makes itself look less appetising to potential predators. Occasional specimens, however, have been found in the stomachs of sharks which are notorious for eating almost anything. In addition to deterring predators, the porcupine fish sometimes changes its shape to lodge or wedge itself into rocks and crevices. When the fish is in its normal shape its long spines lie flat across its body. Other genera in the Diodontidae family carry their spines erect at all times.

Porcupine fish swell up by swallowing large amounts of water very quickly, helped by a flap in the front of the mouth which acts as a one way valve. The fish's stomach is also equipped with strong muscles to hold the water. Unlike other members of the puffer family, porcupine fish do not have a special inflation sac. Occasionally when brought to the surface of the water the fish suck in air instead of water. Some specimens seem unable to release this and will just float about on the surface until they die. Man appears to be the main enemy of the porcupine fish. They are often caught, their skins dried and then sold as curios in sea-side shops. In Japan they are sometimes used as lanterns or lamp shades and in the South sea islands they were used as war helmets.

Porcupine fish are found in all tropical seas but relatively few species are recognised. In the genus *Diodon* there are two different species which are very similar in appearance and usually they are both offered for sale as *Diodon hystrix*.

*Diodon hystrix* is found in the tropical Pacific, Indian and Atlantic Oceans. It is one of the largest members of the family, growing up to three feet (91cm) in the wild. It is found mostly in fairly shallow water, over turtle grass beds or sandy flats and it feeds on sea urchins, molluscs and crabs. It even eats hermit crabs as its strong teeth can easily crush the hard shells. The fish also eats coral, digesting the

# PUFFERS

family *Diodontidae*

by P. M. Millson



*Chilomycterus schoepfi*



*Diodon holacanthus*



fleshy polyps and leaving the pulverised skeleton to accumulate in the digestive system. The fish has sometimes been seen to blow water into the sand to dig out buried shellfish. *Diodon hystrix* has a pale grey body marked with brown spots.

*Diodon holacanthus* does not grow quite so large as its relative. It has been found in the creek waters of mangrove swamps, on reefs and on sandy bays in shallow water. In the Atlantic Ocean it does not range so far north as *Diodon hystrix* and it can be distinguished from this species by its few large, black bands slanted across its back.

Also sometimes imported is the spiny boxfish, *Chilomycterus schoepfi*, which is less likely to puff itself up than fish from the *Diodon* genus. This

fish has a greenish body marked with olive green stripes along its back and it has short, triple rooted spines which are fixed in an upright position. It is found in western Atlantic coastal waters from the United States to Brazil. In some areas along the coast of the Carolinas and Florida it is extremely abundant. It can grow up to a foot long (30cm) in the wild. The spiny boxfish is known to make strange croaking sounds when taken out of the water and it has also been seen to jet propel itself through the water by means of strong jets blown from the gill openings.

*Lophodiodon calori* is a species found only along the coast of East Africa. This fish differs from other porcupine fish in having movable, two rooted spines on its head and fixed, three rooted spines on its body. In fact it is like a combination of *Chilomycterus* and *Diodon* species.

Because of their large size and lack of bright colours, puffers from this family are not particularly popular with aquarists. Their appeal probably lies in their strange appearance when they are swollen up but it is rather cruel to provoke them into doing this and could also mean the loss of a fairly expensive fish. Porcupine fish are aggressive towards fish from the same species and also to smaller fish with which they should not be kept. They can also not be kept with invertebrates. Feeding, however, should present no problem and they will eat mussel, shrimp and most types of animal food. Included in their diet from time to time should be some form of food in its shell to help keep their hard teeth worn down. Like the *Gastrogaster* puffers, these fish can become quite tame, taking pieces of food from their owner's fingers once they have settled in and also blowing water out of the tank while waiting to be fed. It is sometimes recommended that the fish are given a copper treatment when in quarantine because of their tendency to become infested with cryptocaryon infections. Otherwise the fish are relatively easy to keep, perhaps because they come from such a diversity of habitats, being more common in bays and mangrove swamps than on coral reefs.



## Coldwater Jottings by Frank W. Orme

TEN or so years ago the River Tame, which runs through the industrial Midlands, was described as one of the filthiest rivers in Europe. Now, according to the Severn-Trent Water Authorities Water Quality Advisory Panel, downstream of a new lake at Lea Marston, Warwickshire, pollution of the River Tame has been cut by more than a third, and several species of fish are now flourishing in the lower stretches.

Four-fifths of the waters of the Tame are derived from the sewage and effluent of the West Midland conurbation, because it cannot discharge its waste directly into the sea.

For decades sewage from Birmingham has been processed at the huge treatment works at Minworth, in Warwickshire, before being passed into the Tame. The purpose of the purification lake, which was constructed three years ago and is the first of its kind in the world, is to get rid of the high content of toxic solid matter which is swept from city streets and roofs into the river during rainy weather.

The river is diverted into the lake, which occupies the site of disused gravel beds, and this slows the water flow to such an extent that the particles of solid matter are deposited as a sludge. The sludge is removed by a dredger, dried into cakes and buried

safely in an old clay pit. Additional filter beds allow stormwater to settle and thereby to deposit much of the offending matter before being passed into the Tame.

The lake is part of a £60 million scheme which aims to solve the problems of water pollution in the Tame by 1990.

The success of the water authority scheme has dramatically reduced pollution in the Tame and restored oxygen to the water. This has also become evident in the River Trent above Nottingham.



Several species, such as Chub, *Leuciscus cephalus*, are making a welcome comeback in the Trent and other rivers

At one time the poisonous waters from the Tame killed off all life in the Trent for a distance of six miles from the confluence of the two rivers. Now, however, a 12-mile stretch of the Trent has once again become the natural habitat and breeding ground for fish such as roach, bream, chub and dace.

Hopefully it will not be too long before the majority of our polluted natural waters are once again restored to that state of cleanliness that allows aquatic life, in its many forms, to flourish. In the meantime, this encouraging report is a good way to start this new year of 1984 for it holds hope for the future and will be welcomed by all lovers of our natural wildlife and its environment.

### SUB-STANDARD

Both the Bristol Aquarists' Society and the Northern Goldfish and Pond-keepers Society reported successful 1983 open shows, with good attendance figures. However, I was told unofficially that there was some disappointment over the quality of some sections in which the fish were not of such good standard as those seen in the classes of previous years.

My correspondent, Mr 'Tommy' Thomas, reporting on the Bristol show

*Continued on page 54*



# COMMENTARY

by  
Roy Pinks

HAVING gained so much pleasure for many years from keeping fish of all kinds I am always on the lookout for reasons why so many newcomers to the hobby come to fall by the wayside at such early stages. Analysis of the drop-out rate based on the branch of the hobby attempted ought to reveal high figures in the case of marines and low ones for coldwater. But I am beginning to think that this may be false reasoning: I certainly hear of far more failures in keeping goldfish than tangs, and this may well be because those embarking on saltwater tend to get their facts right before parting with the high entrance money needed. Along with all this I have generally encouraged readers to buy secondhand equipment and fish, on the assumption that seasoned hands will know what to look for and will recognise the many bargains which can be had.

What I had not taken completely into account were those who, misguidedly, never read the aquatic press before taking up fishkeeping, and who bought all the necessities secondhand from somebody who had advertised them for sale in the local paper. Now that advertiser is really in something of a quandary. As a seller he has to push the sale, so he

makes fishkeeping sound easy and enjoyable—a far step from the dismal and expensive failure which he actually found it to be: perhaps he, too, had bought the lot from another bankrupt individual who had guaranteed his fate by taking it all on with a tight blindfold.

A friend of mine went through an almost classic miscue of this sort some months ago. Without prior briefing she bought a complete coldwater hardware collection for £25. In the half hour required to complete the transaction she acquired her introduction to goldfish culture. The two foot tank, a cheap pump and under-gravel filter, deep gravel a cover and lights might have justified this outlay, but as soon as the consequential fish had been fed three times a day for a week, the inevitable started and there was only one survivor. Replacements were obtained from the local shop, and the purchaser was so terrified by the view that it was the nitrates which were killing the fish that she came along to me to see what it was all about.

I hope that after a fairly long session on the subject I did make it clear that fishkeeping is really the relationship of oxygen to each specimen, no other factors, generally, being of comparable importance. She was somewhat startled when I pointed out that her surviving fish would be quite all right

in a mixing bowl full of fresh water during the time she took to clean out the whole polluted tank and start again with just a couple of really healthy fish.

Perhaps the hardest thing to take was the instruction to keep numbers down. As she pointed out, there were fifty or more fish in a tank of just this size at the suppliers, so what was good for him was surely good for the rest of us. It's not too easy to explain how so many such fish do actually manage to survive under conditions which break every rule in the book: the answer, of course, is that the losses are high but you seldom see the evidence because it is removed. It is usually a matter of survival of the fittest, and as these are the liveliest perhaps the best tactics are to wait until there are only six fish left before you begin buying any.

The proper tactics are a bit removed from such cynical observations, though it remains a thorough disgrace how so many perfectly respectable dealers treat coldwater fish like tropicals—the latter require far less oxygen per unit, but often seem to be better treated. There have been many attempts to describe just what a healthy coldwater fish should look like and how it should behave. The best quality I can think of is that of obvious nervous energy, with the



## COMMENTARY

fish literally dancing on its fins and ready to go. This "bounce" coupled with swift and sure motion through the water is as good a guide as I can suggest. But beginners who so woefully lack the essentials—and there is nothing to be ashamed about in this—should seek out another fish-keeper and ask the pleasure of his company in a visit to the retailer. I think we all feel a bit flattered at being asked to adjudicate on such a

delicate matter, so we will try to do the job properly, and it does indeed boost the ego if the choice proves to be the howling success it probably will be.

Whilst I have some sympathy with the beginner on the matter of selection of decent specimens, I think he is his own worst enemy when it comes to feeding them. By severely overdoing it he will kill off our prizewinning choices simply because he thinks that fish are like humans and need three square meals a day. A hungry fish is a healthy fish, so keep it just like that: if it won't take a few specks of

flake food, don't feed for a couple of days, and only do so then if the fish actually seek out the food and are seen to ingest it.

I have only extracted a couple of the most important guidelines in this article because they are simple and significant. Yet the fact that they have to be reiterated over and over again makes it worth reminding the newcomer to buy an elementary book before he rushes off to secure that newspaper bargain offer. He will seldom find one as part of the deal—perhaps what I have remarked on here suggests the reason why.

## Coldwater Jottings

*Continued from page 52*

remarked that, having arranged classes for both Lionheads and Ranchu, the Ranchu display did not live up to expectations.

Although the number of Ranchu entered was satisfactory, the quality of the entries was not up to the standard of fish previously seen. In fact, both types were in competition for the 'Nationwide Trophy' and this was won by a very good standard type Lionhead, owned by Bristol member Victor Capaldi.

Mr Thomas wrote that during their society table show, in August, some of the fish had become very miserable after an hour in their show tanks. He tasted the water and it was strongly chlorinated. Subsequently a local Koi group lost a number of fish during their show. The deaths were thought to be due to chlorine.

Naturally, the B.A.S. show committee were very worried about the condition of the water for their open show, for they could not risk the well-being of the exhibits.

My correspondent was given the very responsible task of treating the water in each show tank to ensure that it was free of chlorine and safe for the fish. To do this he checked the chlorine

content of each tank and then added the required amount of sodium thio-sulphate solution. Fortunately the treatment worked and no fish were lost.

Speaking of treating water, did you know that hydrogen peroxide can be a life-saver for distressed fish? Hydrogen peroxide ( $H_2O_2$ ) could, for simplicity, be described as "Greatly Oxygenated Water" normally used as a bleach or antiseptic. It is, in fact, an unstable compound of hydrogen and oxygen, made by dissolving barium peroxide in water and adding sulphuric acid. If used as a bleach for cleaning tanks or nets etc., the chemical will decompose into harmless water.

Apart from acting in its better known capacities it is also useful, from a fish-keeper's point of view, for the rapid replenishment of oxygen in water that is overcrowded, polluted or too warm.

Fish in confined conditions, such as a small show tank or plastic bag, may begin to show signs of distress by mouthing at the water surface. Add a few drops of hydrogen peroxide and there will be a rapid improvement in the fishes' well being. Up to 10 drops of 6% hydrogen peroxide (available from most chemists) can be added to each gallon of water, with no adverse effects. This will greatly increase the oxygen content of the water, to the benefit of the fishes.

When preparing fish for transport over a long distance just add one or two drops of 6% hydrogen peroxide

to the container prior to setting out on the journey.

Recently I sent a number of fancy goldfish on a journey which lasted for almost 24 hours from start to finish and all arrived safe and well with no sign of suffering from oxygen depletion. In fact, the recipient reported that they had settled into their new quarters with absolutely no signs of distress. Something which both he and I were very pleased about.

### DISCOVER THE FISH

by Pisces—

The first is in MUD but not in EARTH  
The second is in BORN but not in BIRTH  
The third is in MOISTURE but not in DANK  
The fourth is in AQUARIUM but not in TANK  
The fifth is in INCUBATE but not in HATCH  
The sixth is in SEIZE but not in SNATCH  
The seventh is in CRYSTAL but not in GLASS  
The eighth is in ORDER but not in CLASS  
The ninth is in FLUKE but not in WORM  
The tenth is in SOLID and also in FIRM  
The eleventh is in SILVER but not in PLATE  
The twelfth is in HOOK but not in BAIT

NSINLIDDSOW



# Fish with ELECTRIC powers

by Cleeland Bean

Illustrated by Jack Hems

INTERESTING to aquarists from a scientific aspect are specimens of the large and not so large types of electric fish. Notorious examples among the former include the electric eel, electric catfish and electric ray which have rightly gained a sinister reputation for giving dangerous shocks. Usually mature specimens of these species will be kept as show items, or perhaps as exhibits in private or public zoo collections. That plenty of space is needed for such denizens is evident from the growth limits of the electric eel which may attain a length of 8 feet and a weight of 50 pounds or more. The electric catfish can reach a length of 3 feet, while an equal length could apply to the smooth-skinned electric ray which may measure 2 feet in width.

Apart from the big three there are, of course, numerous electric fish species available to aquarists, yet harmless because of their weak electrical discharges. At least 250 species are found in this class, and include notable freshwater groups such as the South American gymnotoid fish and the African mormyrid class. Specimens of this nature have special electric sensors suitably arranged for detecting their fellows in dark muddy water, sensing prey or finding their way by using an electrolocation system as a type of radar-like compass.

As yet, there is much to be learnt about the different methods used by electric fish when producing their power output pulses. We already know that the really strong power

producers including the so-called electric eel (*Electrophorus electricus*) of South America, the African electric catfish (*Malapterurus electricus*) and the electric or torpedo ray (*Torpedo marmorata*) from the Mediterranean are able to stun or kill their prey by emitting high voltage shocks. The rays and catfish can send out shocks ranging between 230 and 650 volts, with the higher levels being powerful to kill a swimmer or leave limbs paralysed for life. However, it may be noted that all the rays have electric organs, although in most species the charges are relatively weak when compared with the dangerous effects of the torpedo ray.

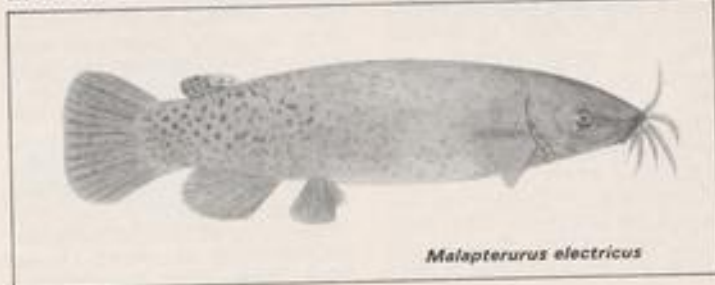
Aquarists with a particular liking for such groups will realise that the 'electric eel' as so described does not actually belong to the true eel family, but is a member of the gymnotoids which inhabit the Amazon and Orinoco rivers. Fish of this genus have elongated streamlined bodies, and are relatives of the characins.

Distinctive relatives of the electric eel are the numerous species of knife

fish with their long narrow bodies and undulating swimming movements. More than half their total length will consist of a long tail, which, in many instances will be transparent or translucent. A suitable inmate for the aquarium is the banded knife fish, and the electric tissues on this and similar species are located along the lateral line. Therein are found a remarkable series of electro-receptors known as Knollenorgans. These are tuned to different frequencies for detecting weak electrical fields, while the fish itself is able to generate a rather weak electrical field amounting in output strength to a mere one or two volts. The knife fish class is also notable for the odd way in which the abdomen is compressed into the front part of the body with the vent being located at the throat.

True aquarists as distinct from those who simply keep fish for ornamental purposes will be interested in the scientific aspects of their hobby. In this respect the many unknown factors about the electric fish family give an observer scope enough for making new discoveries. For example, a great deal remains to be found out about the exact way in which a fish can distinguish its own electrical output signals from those emitted by other species. Moreover, the picture is further complicated when considering that different sets of additional discharges are used when fish send out electrolocation pulses which aid them to find their way in the darkness or through muddy water.

Because of the readiness with which the torpedo ray adapts itself to aquarium life this species has become a favourite subject for laboratory studies. Those who may be fortunate enough in having specimens under close observa-



*Malapterurus electricus*

tion will know that despite having electric organs the torpedo ray does not always use electricity for capturing or killing its prey. In fact, the fish has been recorded by scientists as using the usual search and snatch method for taking food from the floor of aquariums on numerous occasions minus the aid of electric power. Nevertheless we cannot exclude the possibility that an artificial environment could be affecting things here somewhat, so more research is necessary.

It has been pointed out that all muscular activity whether in animals or human beings is associated with the production of electricity, but only in particular fish groups does the output of real electric power reach a dominant level. However, fish generally are seemingly sensitive to the influence of relatively weak electric currents as caused by water flowing past the lines of force created by the earth's magnetic field. So apart from electric fish as such, the aquarist can expect that the inmates of every home aquarium will be picking up and reacting to more environmental signals than he or she might have imagined.

True electric fish as we have already seen are able to emit and to receive varying degrees of electro-magnetic pulses. Typical is the African mormyrid fish (*Pollimyrus isidori*) studies of which show that the male and female of the species can be identified in a sexual sense by electrical discharge patterns or impulses which differ somewhat for each gender. This difference also assists the male to recognise the female and vice versa, while it again plays an important part during the courtship period.

Tests show that if two males are seeking to win the same mate that the more dominant specimen will make a threatening move by sharply increasing his output of electrical pulses. But shortly afterwards the energy output drops to a low frequency level, to be followed perhaps by physical attacks of the dominant male upon his opponent. Significantly the latter usually avoids outright conflict by adopting a submissive stance that involves the complete shutting down of its own electrical output for an interval that can last as long as three

minutes.

Recent experiments made at the University of Sheffield by Max Westby and his colleague Frank Kirschbaum reveal that the electrical discharge emitted by juvenile mormyrid fish (*Pollimyrus isidori*) are similar in pattern to those given out by the female of the species. It is only on the road to maturity as a result of hormone changes that the young males begin to gain their own characteristic type of electrical output. The differing current flows between male and female are also believed to enable fish to recognise if particular specimens are old or young, and whether or not the appropriate species is at hand.

That each species has its own special electrical frequency has been shown by aquarium experiments in which the use of electrodes and tape recordings was found to attract individual fish of a given species. These were drawn to the tape recordings or broadcast signals of specific electrical discharge patterns as played through the electrodes. In other words, a fish would respond to the electrical frequency of its own species, while ignoring the broadcast signals of other species. During such operations it was observed that a mormyrid fish when approaching an electrode would use aggressive head-butting movements. Somewhat similar reactions have been noted regarding marine species like the ray and dogfish, both of which will attack and try to eat electrodes carrying weak currents of electricity.

These observations fit in with what aquarists may have noticed about the habits of the catfish (*Ictalurus*). This species can detect its prey from several yards away by means of electric sensors which help the fish to find frogs and other creatures hidden beneath sediments at the bottom of ponds or lakes. Because of such detection work camouflage will be of little use to a frog even though it may be resting quietly among reeds. The catfish is thus able to form types of electrical X-ray pictures amid dark, muddy waters, where normal eyesight would not count for much.

Marine biologists know that dogfish, sharks and rays are likewise able to detect flatfish, plaice and molluscs,

etc., by using electric sensors for finding prey as camouflage on the surface of sand or buried beneath it. We can only speculate of course, about how exactly the brain of a fish interprets such electrical signals, although there are indications that the lines of an electric force or an electric field around a fish will become distorted by emanations from a prey species. This difference is then recorded by the predator under cover of darkness or in muddy waters. Given these conditions it is able to monitor changes in its own electric field which will show up as distortions, thus providing an outline of the prey animal in terms of its shape and size.

Among the smaller knife fish varieties we find species such as the mottled knife fish (*Hyphomus artedi*) at a length of 6 ins., and occurring in eastern Guiana, the green knife fish (*Eigeomannia virescens*) 15 ins. from South America, Schott's sternarchella (*Sternarchella schotti*) 8 ins. from Brazil and gymnotus (*Gymnotus carapo*) 15 to 20 ins. as a denizen of central and South America. Last but not least is the white-browed sternarchus (*Sternarchus albifrons*) 11 to 18 ins. as found in the Orinoco, Amazon, Rio Paraguay and Rio Parana. This rare species looks attractive with its velvety black body carrying two white tail bands and displaying a white stripe which stretches from the jaw, over the head and extends half way down the back.

Getting to know your fish by body appearance, swimming habits, skin texture and where it comes from gives one plenty of scope for discovering new things about the electric fish family in general. As yet, many species are novelty items which remain unknown to the average aquarist. Possibly the preference of electric fish for shady or nocturnal habitats may not endear them to keepers of bright colourful tropical specimens—for all that they do deserve attention from the serious hobbyist and naturalist.

If we look for example, at the green knife fish we will find that its gills are weakly developed, and that its mouth functions as an auxiliary breathing organ. A long anal fin enables the fish to swim backwards or forwards





*Eigenmannia virescens*



*Gymnotus carapo*



*Sternarchus albifrons*

with eel-like movements. In this species the dorsal tail and pelvic appear as rudimentary appendages or are lacking altogether. Another remarkable species is the mottled knife fish with its small eyes overgrown by skin, and displaying a translucent anal fin.

Like the species already mentioned (*Gymnotus carapo*) has an auxiliary breathing system; it is identified by a covering of small flesh-coloured

scales. Sometimes particular specimens will carry brown wavy cross-striped lines, and the fish can produce from 60 to 65 electric discharges per second. Indeed in general appearance young specimens resemble electric eels of a similar size. The flexible tails of knife fish are useful appendages for helping them to perform gymnastic swimming movements as may be seen from the habits of the white-browed

sternarchus which usually swims on its back or side, and makes use of a flexible tail for supporting itself for long periods in an upright position at the bottom of aquariums.

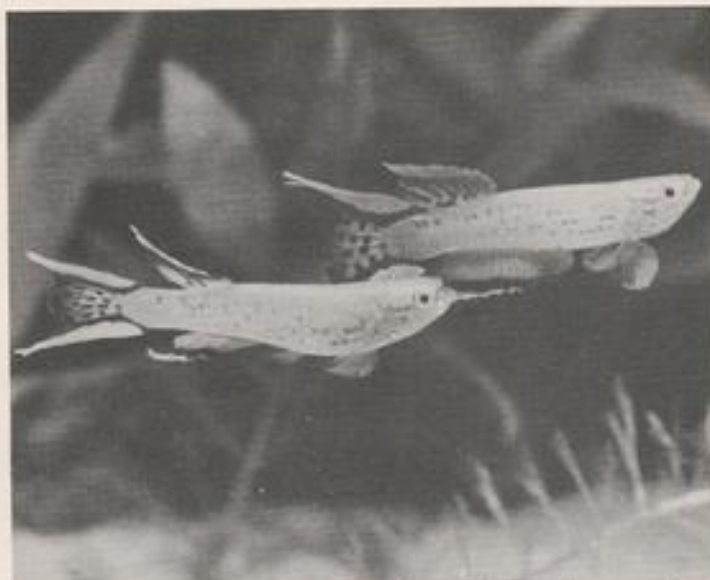
A peculiar aspect of the African mormyrid groups which distinguishes them from all other kinds relates to the extremely large brain in proportion to body size. So great is the difference here that the mormyrid brain comprises 0.19 and 0.12 of the overall body weight. Why this should be is something of a mystery, especially when the very small mouth is considered, and only allows the fish to feed on tiny worms, microscopic animals and algae. Even with its large brain the mormyrid class does not appear to be more intelligent in terms of fish behaviour patterns than other groups.

It is interesting to note that the real electricity producers such as the electric eel, electric catfish and torpedo ray derive their power from thousands of modified muscle cells which form positive and negative poles as would be seen in a dry battery system. The current thus induced will be found to light electric light bulbs, magnetise needles, emit sparks and cause chemical compounds to decompose. In fact, the electric eel in its normal body metabolism decomposes water into oxygen and hydrogen as would be the case if an electric current affected water under laboratory conditions.

The hydrogen produced by the electric eel diffuses into the digestive tube to be expelled through its mouth as small bubbles, while most of the oxygen is absorbed by the tissues to keep the respiratory process in action. Gas bubbles will be noticed coming from an eel's mouth when it is searching for prey or lunging at an enemy. Observers may have noted such reactions when viewing electric eels in public aquariums. An important point about electric fish is that the brain and nervous system is well insulated against the effects of the electric organs by fibrous and gelatinous materials. Without such protection of the inner tissues the electric eel, electric catfish and torpedo ray would fail to survive.

# ACOLOURFUL KILLIFISH

(*Aphyosemion australe*)



Two rival males

by R. Zukal

WHenever an aquarist decides to keep a member of the family of egg-laying toothcarps, it is quite probable that this splendid, brightly coloured fish will be chosen. This is understandable as it is peaceable, not demanding and has exceptionally beautiful colour.

As early as 1913 this toothcarp, which grows up to 6 cm (generally smaller), was imported to Europe from its home in Gabon in West Africa. The male has a pike-shaped, brownish-red body, with the gill covers and the part of the body immediately behind having a greenish or bluish colour. The body and fins are also decorated with red dots and flecks. The dorsal

and anal fins are drawn out into a flag-like form. The lyre-shaped caudal fin is drawn out into a thread-like appendage at the top and bottom. It has a reddish-violet border and is greenish-blue in the middle, with red markings. Like all *Aphyosemion* species, the female is somewhat dull in coloration, being light brown with a few red markings on the sides of the body. The fins are shorter, not elongated as in the male fish.

The fish are at home in a smallish tank containing floating plants to give it a certain amount of shade. The water should be clear, slightly acid, medium-hard and kept free from *infusoria* by filtration. The temperature should not be higher than 20-22°C. Although it has already been said that these fish are peaceable, they should be kept in a species tank

or together with peace-loving fish of the same genus. They must be given live food.

In order to breed the fish, the temperature is raised to 24°C. Otherwise, conditions are the same for general purposes. Fine-leaved plants or a largish clump of Java moss should be put in the tank. The fish spawn repeatedly, but irregularly, at intervals of a few days, or even weeks. The eggs are adhesive, quite large and easily visible. With the aid of a glass tube they can be shaken from the plants and sucked up and removed from the tank into a smallish glass dish, where they are kept at a shallow water-level (2-3 cm). The water in the dish is taken from the tank. The dish is covered with a sheet of glass. As the eggs are susceptible to light, the dish and the eggs are kept in darkness. White, infertile eggs must be removed daily. If eggs are collected from the spawning tank on different days, a further dish must be ready for each occasion, marked with the date. The young take ten days or more to emerge from the eggs. When they have hatched, they must be slowly and carefully transferred to a ready-prepared rearing tank. Care must be taken not to upset the dish and contents. The young fish grow quickly and are already sexually mature after about ten weeks.

In the past this fish has been named as *Haplochilus calliurus*, *Haplochilus*



Female (below) selecting spawning site

*calliurus* var. *australis*, *Panchax polychromus* and *Panchax australe*. Some time ago a man named Hjerresen succeeded in breeding a yellow variety of *A. australe*, which has subsequently been named as *Aphyosemion australe hjerreseni*.



# Tomorrow's AQUARIST



## DESIGN-A-FISH COMPETITION —A REMINDER

LAST month saw the launch of our first Tomorrow's Aquarist Competition with a range of exciting prizes donated by Tetra. If you missed it, get hold of a copy of the December 1983 issue of A and P without delay for full details of this unusual and original competition. You still have time to enter. Don't waste any time, though—we need to receive your entry by 31st January at the very latest. There are two Age Groups:

- For entrants 15 years of age on 1st December 1983.
- For entrants between 15 and 18 years of age on 1st December 1983.

Keep the entries coming but please mark your envelope clearly "Design-a-fish Competition" along the top edge. Good luck!

★ ★ ★ ★ ★ ★ ★

## PROGRESS REPORT ON ANDREW AND PHILIP

BACK in June 1983, we featured two budding authors from Dunfermline in our very first Tomorrow's Aquarist page.

We are delighted to report that Andrew Grant and Philip Quinn (both aged 14) have gone from strength to strength since then.

For a start, news filtered through to their school via A and P readers and this, in itself, gave them a great deal of "internal" publicity at Queen Anne High School in Dunfermline.

Shortly afterwards, they were contacted by representatives of the Dunfermline and District Aquarist Society who had read our feature and who encouraged them to join the Society. This they duly did and now regularly attend lectures and discussions where they are becoming well known for expressing their points of view on aquatic matters.

They also travel outside their home base for meetings, usually with D and DAS. One such outing took them to Dalkeith, outside Edinburgh, on 23rd October to attend a lecture being given to representatives of several Scottish Aquarist Societies by our Consultant Editor.

After having corresponded regularly since the spring of 1983, it was great to meet face to face for the first time. We look forward to further meetings in the future.

At the time of the lecture, Andrew and Philip were already making plans for the British Aquarist Festival at Belle Vue in November.

Grant/Quinn Productions now have their own specially designed letter-head and an impressive list of publications which seems to increase every time we hear from them.

The booklets include guides to the care of non-aquatic organisms as well as aquatic ones. All are published by Petbooks Association Ltd., a division

of Grant/Quinn Productions. So far, the aquatic list reads as follows:

Title	Price
Your First Tropical Aquarium	6p
Maintaining the Aquarium	5p
Swordtails and Platies	4p
British Newts	5p
The One-Spot Livebearer	5p
Terrapins	5p
How to Keep Goldfish	5p
Guppies	5p
Axolotls	5p
Blue Eyes ( <i>Girardinus metallicus</i> )	5p
Goodeids	5p

The above publications may be obtained directly from Andrew and Philip at Grant/Quinn Productions, 45 Cameron Street, Dunfermline, Fife, Scotland KY12 8DP.

There is little doubt that we shall hear a great deal more from these two ardent, enthusiastic and competent aquarists in the future. We sincerely wish them continued success and look forward to keeping in regular touch.



Andrew (right) and Philip photographed with our Consultant Editor, John Dawes, during a break in John's lecture in Dalkeith

# Meet the Societies



## PASSENGER TRANSPORT EXECUTIVE AQUATIC SOCIETY



The P.T.E.A.S. logo



*Papilochromis ramirezi*—the Ram

SOME months ago, a few of the fishkeeping members of the Passenger Transport Executive Welfare Social Club in Byker, Newcastle-upon-Tyne, got together and decided, in view of their shared interest and the existing facilities for meetings at the Club, to form a new Fish Society. This, they duly did in September 1983, with the sole, simple aim of cultivating "sheer enjoyment" in fishkeeping.

The P.T.E.A.S., despite the fact that it carries the words "Passenger Transport Executive" in its name, is open to all potential and established aquarists, not just those involved in "Transport"! The close association between the Aquatic Society and the Welfare Social Club, though, has several added, incidental advantages which other Societies often have great difficulty in obtaining. By the simple payment of an additional initial subscription and a small annual "extra", P.T.E.A.S. can call on the considerable facilities of the long-established Welfare Social Club, including their lecturing/meeting rooms, etc.

During its early days, the Society has benefited greatly from its association with the North East Federation of Aquarist Societies. N.E.F.A.S. provides speakers, judges and advisers and has, therefore, contributed significantly towards establishing the firm base that P.T.E.A.S. already enjoys.

Meetings take place every fortnight (on Tuesdays) at the P.T.E.W.S.C. at Byker, Newcastle, starting at 8.00 p.m. Wives/husbands and children of members are made welcome at these meetings which include slide shows, lectures, discussions and Table Shows. Points won at the Table Shows will be totalled over the coming year and an award given to the overall winner. Plans are already under way for the first P.T.E.A.S. Open Show which, it is hoped, will take place in mid-1984. The Society is also currently engaged in installing two aquaria in the lounge of the Welfare Social Club which they hope will not only provide an attractive decoration, but also act as a focal point for generating interest in the hobby and encouraging new members to join.

Subscription Rates: Year I, £1.00 for Aquatic Society plus £5.00 for Welfare Social Club. Year II and thereafter, £1.00 for A.S. and £1.50 for W.S.C.

Apply to: Mrs. G. Howell, 89 Holly Avenue, Wallsend, Newcastle-upon-Tyne. Tel: N/C 340016.

## CHARACIN STUDY SOCIETY

Characin  
Study  
Society



The C.S.S. logo



*Hyphessobrycon erythrostigma*

SOME of today's popular Characin species, such as the Black Neon, *Hyphessobrycon herbertaxelrodi* (see "Cover Story" in A and P, July 1983) first come into the hobby accidentally in imports of other, often more colourful, species. Whenever this happens, the new fish obviously cause a great deal of confusion and may either disappear as quickly as they come, or else be given a number of common names which can often be less than appropriate and make identification a nightmare for the serious fish-keeper.

It was, in fact, identification problems experienced with certain Characins at the Kingston Open Show of 1973 that led a number of aquarists to get together and form the Characin Study Society. The inaugural meeting took place at the King's Hall, Harlesden in February 1974, where the first committee was elected.

The aim of the C.S.S. is the furtherance of the study and knowledge of Characins "in all their aspects". They endeavour to achieve this by the promotion of the keeping and breeding of Characins, together with a study of their classification, habits and environmental requirements.

Meetings are held on the first, second and fourth Tuesdays of every month. At these meetings, members can pursue one or other of the Society's research projects as well as take part in dissections or in the collation of data. This level of involvement has led to contact being established between the C.S.S. and museums, universities and Embassies in a number of countries.

Collaboration with other bodies include the joint publication of the F.B.A.S. Booklet No. 8, the provision of lectures, slide shows and demonstration dissections at other Societies' meetings and Conventions. (See "Meet the Societies", October 1983).

The C.S.S. is always willing to assist aquarists in the identification or general care of their Characoids. However, there is a special request: "Please do not send dead specimens by post". A colour slide will do, initially.

Prospective members are always welcome at the Society's meetings but at the moment, though, there is no postal membership available.

We wish the C.S.S. a happy 10th anniversary.

Subscription Rates: Working Membership, £1.50, plus 10p per meeting.

Apply to: Mr. M. West, 76 Lingfield Avenue, Kingston, Surrey. (S.A.E. please).



# NEWS...

## SOUTH WEST



AT the October meeting of the Dorchester Tropical Fish Society it was decided by members to hold another open show in 1984 following the success of their 1983 show. However, potential exhibitors are asked to note that the date for this years show will be on Sunday 23rd September (a month later than our traditional date).

The committee is pleased to announce the inclusion of class Ga to the show schedule making a total of 33 separate classes in all. With the purchase of four more annual trophies the club is now able to present a trophy to every individual class winner. In addition to these, there will also be a substantial Club Trophy to be awarded to the highest pointed visiting club. Show schedules will be available in early Spring and can be obtained from the Show Secretary, Mr. Barry Syme, 3 Ardham Green, Poundbury, Dorchester, Dorset DT1 2PS.

North Avon A.S. enjoyed a very full evening in November, when they were fortunate enough to have members of the Bristol and West Kent Keepers Society along. They gave us a glimpse into their speciality, with particular emphasis on filtration. With this plus a table show for the Pristine Fish resulting in 1st and 2nd places going to Mr. P. Long, 3rd to Master Matthew Rowland and joint 4th places to Mrs. J. Arnold and Mr. N. Curry, we overran our time. However, an enjoyable evening was had by all. We would like to wish all our fellow aquarists, a Very Happy and Successful New Year, and hope they had an enjoyable Christmas. We would invite the attendance of anyone, new or established in the hobby, at our meetings on the third Monday of each month, at Henham Folk Centre, High Street, Haslem, Bristol, commencing at 7.30 p.m. Any enquiries should be addressed to the Secretary, E. W. Cummins, 1 St. Annes Close, Galsbury Heath, Warrimley, Bristol BS15 5EH, all enquiries will be answered.

THE 7th a.g.m. of the West Cornwall Fishkeepers on 11th November was, as always, well attended and speedily concluded as the Cheese and Wine evening immediately followed it. The a.g.m. was attended by over 35 people and with food and five gallons of punch waiting, was concluded in some 30 minutes. About average for an a.g.m. The Cheese and Wine part lasted much longer and was a great success. Visiting Aquarists are most welcome.

Information from Secretary, Ray Hocking, 99 Pendosa Park, Camborne, Tel: Cam 719921. Chairman, Monty Ray, 6 Trelawney Road, Camborne. Tel: Cam 712930.

MR. PETER TEBBY, of West of England Aquatics, spoke to members of Bristol A.S. about Koi. After describing the more popular varieties he spoke about the methods of achieving the high quality water that Koi require. He warned against feeding Koi with too much protein and advocated the monitoring of the quality of the received water. While setting up a small pond that had held some of this year's baby Boino Shubunkins, Wil Ham was supposed to discover a few second generation Fry. This is the second report of a spawning from 1983 bred fish and must be a consequence of the long warm summer.

# From Aquarists' Societies

Table Show results. Koi: 1, 2 and 3, W. Perkins; 4, T. Harper. A.O.V. Pond or River: 1 and 4, C. Hayes; 2, J. Day; 3, G. Smith.

RESULTS of the Tonhams Aquarists club table show, held at the Victoria Hall, Ash on 3rd November. The entry was open to 'any fish' and split into two classes. Class A.O.V. shown previously: 1, N. Miodinow, Tilapia (sumatrensis); 2, R. Hunt, Pteriodella pictus; 3, C. Pearce, Colisa lates. Class A.O.V. not previously shown: 1, D. Burnett, Pseudocrypterus minutus; 2, K. Perrin, Rambora trilineata; 3, N. Hardy, Corydoras amatus. Judges: Ray Cooke and Ian Legge. A total entry of 20 fish was recorded. The evening was concluded with an informal and varied club discussion.

Tonhams Aquarists meet at 8 p.m. on the 1st and 3rd Thursday of every month at the Victoria Hall, Ash, Aldershot, Hants, and would like to extend a welcome to new prospective members in the area. Please contact: Jeff Otley on Aldershot 31062 or Andrew Pearce on Aldershot 25686 for further details. 1984 promises to be an exciting year with an interesting and varied programme already planned.

## SOUTH EAST



A TALK entitled "Fish Diseases and Care" was well received by the 45 members who attended the November meeting of the East Kent Aquatic Study Group. Guest speaker for the evening was Andrew Stag who gave the answers to why a seemingly healthy fish may suddenly die and how to recognise the various diseases which affect tropical and cold-water fish. The medications which are now available to the aquarist were discussed and Andrew stressed the importance of following the dosage instructions.

The table show for this month was for Rasbora and Barbs, and the judge was Guy Woodhams. Rasbora: 1, T. Weisell; 2, J. Edwards; 3, P. Edwards; 4, M. Martin. Barbs: 1, D. Wibley; 2, P. Edwards; 3, C. Edwards; 4, T. Weisell.

Club meetings are held on the second Tuesday of each month at the Memorial Hall, Belling, Herne Bay.

TUESDAY 15th November was a great night for bergin hunters when South Park Aquatic Study Society held their annual Bring and Buy evening. After welcoming club members and old friends, Chairman Dave Brooks handed over to guest auctioneer Davis Ellis who was in charge of the wide variety of lots ranging from fish to toys and clothes to house plants.

18th October was a special night with the presentation of a special diploma to long serving senior members Roy and Helen Trim who have both held various committee posts and made a valuable contribution to the club over the years. The rest of the meeting was dedicated to Coldwater Plants with Helen Trim showing a variety of slides featuring both pond and aquarium species to an attentive audience.

The traditional S.P.A.S.S. v. Isle of Wight Insect-Club was held in Wimbeldon on Sunday 6th November. Classes for Singled Gold-

fish, Twinstail Goldfish and native and foreign species plus an extra "Overkill" section were provided with a good entry being received from both societies. Victory this year went to S.P.A.S.S. and an enjoyable day was had by all.

S.P.A.S.S. specialises in coldwater fish-keeping and meets at 8 p.m. on the third Tuesday of every month at the Wimbeldon Community Centre, St. George's Road, London SW19. New members and visitors always welcome. Full details from Mrs. Marguerite Dudley, 163 South Park Road, Wimbeldon, London SW19 8RX. (Tel: 01-540 5662).

East London Aquarist and Pondkeepers Association held their 35th annual open breeders show at the Central Hall, Cecil Road, Chadwell Heath, Romford, Essex. The results are as follows: Class A: 1, Paul Mills (WDAS); 2, Linda Adams (WDAS); 3, Graham Poxford (ELAPA); 4, Roger Campion (ELAPA). Za: 1, Chris Chewright (SLADAS); 2, Paul Mills (WDAS); 3 and 4, Gino Dallanegro (ELAPA). Zbc: 1, Chris Chewright (SLADAS); 2 and 4, Gino Dallanegro (ELAPA); 3, Paul Mills (WDAS). Xb: 1 and 2, Roger Campion (ELAPA); 3, Gino Dallanegro (ELAPA); 4, Linda Adams (WDAS). Xc: 1 and 3, Irene Boss (ELAPA); 2, John Boss (ELAPA); 4, Gino Dallanegro (ELAPA). Xdb: 1, Roger Campion (ELAPA); 2, John Symonds (ELAPA). Xd: 1, Graham Heygreen (ELAPA). Xdi: 1 and 2, Martin Howells (ELAPA). Xr: 1, Terry Robinson (ELAPA); 2, 3 and 4, D. Ridgewell (SLADAS). Xghlm: 1 and 3, Frank Scary (EKASG); 2 and 4, Ken Stansard (ELAPA). Xir: 1, Irene Boss (ELAPA); 2, Roger Campion (ELAPA). Xopors: 1, 3 and 4, Andrew Walker (SLADAS); 2, Mark Wingham (ELAPA). Xy: 1, Chris Chewright (SLADAS); 2, Frank Scary (EKASG); 3, Andrew Walker (SLADAS); 4, Paul Mills (WDAS). Xuyv: 1, C. Wiseman (Romford & Bc.); 2, 3 and 4, P. C. Legdon (S.E. London); 2, M. Smith (Romford & Bc.); 3, 4, Adrian Dempsey (HASS). Xz: 1, John Boss (ELAPA); 2, Paul Mills (WDAS); 3, Donna Howells (ELAPA). Ndb: 1, Adrian Dempsey (HASS). Ne: 1, Vincent Marshall (Bethnal Green & Ind.); 2, Terry Robinson (ELAPA); 3, P. C. Legdon (S.E. London); 4, C. C. Wiseman (Romford & Bc.). Nf: 1 and 3, Chris Chewright (SLADAS); 2, Colin D'Almeida; 4, P. C. Legdon (S.E. London). No: 1, Frank Scary (EKASG); 2, Chris Chewright (SLADAS); 3, Paul Mills (WDAS); 4, Andrew Walker (SLADAS). Nu: 1, D. S. Wiseman (Romford & Bc.); 2, C. Barber (Bethnal Green & Ind.).

East London would like to thank our friends from all societies who contributed in making our show a success; our thanks to judges Mr. R. Dale, Mr. D. Durrant, Mr. T. King, Mr. C. Pannell and Mrs. J. Pannell, also to Mr. Sam Bray of Sabray Aquarists for his most excellent contribution.

QUESTIONS on the many various aspects of Keeping and Breeding of Tropical, Coldwater and Marine Fish, were expertly answered by three of the experienced members of the East Kent Aquatic Study Group at their October meeting. The panel consisted of D. Byfield, J. Edwards and D. Martin who were bombarded with the questions by the seventy-three members who attended the meeting. The open forum was chaired by R. Spore. Guest judges for this month were Joan and Collin Pannell. They expressed their appreciation of the excellent condition of the fish in the table show, which was for matched pairs, and awarded the following cards: Tropical Egglayers: 1, T. Edwards; 2, S. Weisell; 3, G. Neaves; 4, D. Bridgeman. Tropical Livebearers: 1, D. Bridgeman; 2, A. Aprial; 3, T. Weisell; 4, A. Aprial. Coldwater: 1, T. Weisell; 2, D. Bridgeman.

The evening concluded with an auction of fish and plants.

Meetings are held on the second Tuesday of each month at the Memorial Hall, Beltrange, Herne Bay. All fishkeepers are welcome.

**THE Newham A.S.** of London held their a.g.m. in October. The new officers for the year 1983-84 are as follows: Chairman, R. Duck; Vice-Chairman, M. Brandon; Secretary, T. Labrum; Treasurer, Mrs. J. Johnson; P.R.O., N. Johnson. Our meeting place and day have been changed to Darling Hall, Earlham Grove, London E.7, on the first and third Thursday of the month at 7.30 p.m. New members and visitors are always welcome. For further information, T. Labrum, 40 Gainsborough Avenue, Manor Park, London E.12. Tel: 01-478 8086.

AT the recent annual general meeting of **Romford and Becontree A.S.**, held at St. Augustine's Church Hall, Barbek Road, Rush Green, Romford, Essex, the following committee were elected: Chairman, C. Wiseman; Secretary, M. Smith; Treasurer, G. Sarpow; Show Secretary, B. Brown; Asst. Show Secretary, Mrs. D. Godfrey; Programme Officer, Mrs. S. Schofield; P.R.O., Mrs. L. Kirtch; Social Secretary, Mrs. D. Wiseman; Junior member, J. Wiseman; Lay member, T. Schofield.

The society meets on alternate Thursdays and new members or visitors are always welcome.

## MIDLANDS AND WALES



**THE Staffordshire Aquatic Society** now meets at the Dormans Sports & Social Club, Tinsall Road, Stafford. Details from the Secretary, Mr. L. F. Linton, 280 Sandon Road, Stafford ST16 3HP. Telephone: 44496.

## NORTH



**RESULTS of the Withernsea A.S. 2nd** open show, which was held on the 9th October. **Carp:** 1, Mr. and Mrs. Bradbury (HCGAG); 2, Mr. and Mrs. Pickford (HCGAG); 3, Mr. and Mrs. Badley (Scarborough). **Platies:** 1, E. Sanderson (Hall); 2, I. A. Johnson (Wyke); 3, M. P. Jordan (Bridlington). **Mollies:** 1, Mr. and Mrs. Badley (Scarborough); 2, S. Taylor (Wyke); 3, Mr. and Mrs. Johnson (I & E). **Class 4:** 1, Mr. and Mrs. Pickford (HCGAG); 2, M. Lake (I & E); 3, Mr. and Mrs. Badley (Scarborough). **A.O.V. Livebearers:** 1 and 3, Mr. and Mrs. Silk (SJS); 2, M. P. Jordan (Bridlington). **Characins (Small):** 1, 2 and 3, Mr. and Mrs. Lake (Grimsby and Cleethorpe). **Characins (Large):** 1, Mrs. Anderson (Wyke); 2, B. and J. Heppinstall (Castelford); 3, E. A. Johnson (Wyke). **Riff Lake:** 1, B. and J. Heppinstall (Castelford); 2, K. Webb (Scarborough); 3, Mr. and Mrs. Lake (Grimsby and Cleethorpe). **Angels:** 1, Mr. and Mrs. Pickford (HCGAG); 2, T. C. Brackenbury (HCGAG); 3, Mr. and Mrs. Johnson (I & E). **A.O.V. Cichlids (Small):** 1, Mr. and Mrs. Silk (SJS); 2, S. Taylor (Wyke); 3, Mr. and Mrs. Bolton (Pocklington). **Cichlids (Large):** 1, Mr. and Mrs. Silk (Pocklington); 2 and 3, M. P. Barton (Wyke).

**Rashbors and Minnows:** 1 and 3, Mr. and Mrs. Lake (Grimsby and Cleethorpe); 2, M. Lake (I & E). **Danos:** 1, Mr. and Mrs. Lake (Grimsby and Cleethorpe); 2, B. and J. Heppinstall (Castelford); 3, I. A. Johnson (Wyke). **Barbs (Small):** 1, Mr. and Mrs. G. Lamingham (AFS); 2, I. A. Johnson (Wyke); 3, K. Webb (Scarborough). **Barbs (Large):** 1, Mr. and Mrs. Pickford (HCGAG); 2, Mr. and Mrs. Iley (Withernsea); 3, M. P. Jordan (Bridlington). **A.V. Aphosemion:** 1, 2 and 3, T. and G. Garton (Hall). **A.O.V. Killies:** 1, Mr. and Mrs. Lake (Grimsby and Cleethorpe); 2, Mr. and Mrs. Johnson (I & E); 3, Mr. and Mrs. S. Clark (Doncaster). **Anabantids (Small):** 1, Mr. and Mrs. Pickford (HCGAG); 2, B. and J. Heppinstall (Castelford); 3, Mrs. Anderson (Wyke). **Anabantids (Large):** 1, M. P. Jordan (Bridlington); 2 and 3, D. Baker (Keighley). **Fighters (Multi-Coloured):** 1 and 2, Mr. and Mrs. Brackenbury (HCGAG); 3, B. and J. Heppinstall (Castelford). **Fighters (True):** 1, Mr. and Mrs. Bradbury (HCGAG); 2, B. and J. Heppinstall (Castelford); 3, Mr. and Mrs. Johnson (I & E). **Corydoras and Bechtis:** 1, Mr. and Mrs. Groom (Doncaster); 2, B. and J. Heppinstall (Castelford); 3, Mr. and Mrs. S. Clark (Doncaster). **A.O.V. Catfish:** 1, J. Clark (Doncaster); 2, Mr. and Mrs. Iley (Withernsea); 3, D. Watson (Hall). **Loaches and Bettis:** 1 and 3, Mr. and Mrs. Richardson (Scarborough); 2, Mr. and Mrs. Pickford (HCGAG). **Sharks:** 1, Mr. Haughey (Hall); 2, G. Wilson (Withernsea); 3, Mr. and Mrs. Brackenbury (HCGAG). **A.O.V. Tropical (up to 15cm):** 1, S. Taylor (Wyke); 2, Mr. and Mrs. Silk (SJS); 3, B. and J. Heppinstall (Castelford). **A.O.V. Tropical (over 15cm):** 1, K. Webb (Scarborough); 2, Mr. Bartlett (Wyke); 3, M. A. Aspinall (Withernsea). **Livebearers (Pairs):** 1, S. Taylor (Wyke); 2, G. A. Todd (Hall); 3, M. P. Jordan (Bridlington). **Egglayers (Pairs):** 1, Mrs. Anderson (Wyke); 2, T. and J. Garton (Hall); 3, Mr. and Mrs. Bradbury (HCGAG). **A.O.V. Livebearer (Female):** 1, Mr. and Mrs. Silk (SJS); 2, M. Lake (I & E); 3, Mr. and Mrs. Pickford (HCGAG). **A.O.V. Eggliver (Female):** 1 and 2, Mr. and Mrs. Lake (Grimsby and Cleethorpe); 3, Mrs. Anderson (Wyke). **Breeders (Livebearer):** 1, Mr. and Mrs. Anderson (Wyke); 2, M. P. Jordan (Bridlington); 3, Mr. and Mrs. Pickford (HCGAG). **Breeders (Egglayer):** 1 and 2, 1, Mr. and Mrs. Bolton (Pocklington); 3, Mr. and Mrs. Brackenbury (HCGAG). **Goldfish and Comets:** 1 and 2, Mr. and Mrs. Silk (SJS); 3, Mr. and Mrs. Iley (Withernsea). **Fancy Goldfish:** 1 and 2, Mr. and Mrs. Silk (SJS); 3, S. P. Rinder (Ind.). **A.O.V. Goldwater:** 1, G. A. Todd (Hall); 2, C. Taylor (Wyke); 3, Mr. and Mrs. Iley (Withernsea). **Mini Jars:** 1 and 3, Mr. and Mrs. Iley (Withernsea); 2, B. and J. Heppinstall (Castelford). **Best Fish in Show:** Mr. and Mrs. Silk (SJS). **Best Exhibit:** Mrs. Anderson (Wyke).

ON Saturday 12th November the six member societies of the **Statenmans' League** met at the "Goodfriendship Inn", Cottingham Road, Hull for the annual prize presentation.

The League was won for the first time by the York Aquarist Society. Mrs. Y. Farrand of Bridlington won the fancy dress competition, elegantly dressed as a clown.

The trophies were presented by Mr. John Searle who as a Fish Breeder and Importer, and as an 'A' class judge, is well known on the Aquarist circuit. Final League positions as follows: 1st York, 426 pts. 2nd Scarborough, 375 pts. 3rd Hull, 248 pts. 4th Wyke, 213 pts. 5th Bridlington, 161 pts. 6th Ebor, 76 pts.

Final results of each Class **Statenmans League 1983:** Guppy: R. Hagen (Ebor) 9 pts. Swords: M. Fawcett (York) 19 pts. A.O.V. (Live): S. Taylor (Wyke) 23 pts. Large Barbs: M. W. Smith (Hall) 29 pts. Large Characins: C. and S. Waller (York) 18 pts. Fighters: Mr. and Mrs. Badley (Scarb.) 14 pts. Large Cichlids: Bolton and Stee (York) 13 pts. Angels: J. Maxwell (Scarb.) 10 pts. Large Anabantids: M. and P. Jordan (Brid.) 23 pts. A.O.V. Cats: M. H. Smith (Hall) 17 pts. Molly: Mr. and Mrs. Badley (Scarb.) 13 pts. Platy: S. Taylor (Wyke) 13 pts. Small Barbs: K. Rutter (Scarb.)

12 pts. Small Characins: M. Fawcett (York) 13 pts. Ras, Dan, Mins: C. and S. Waller (York) 12 pts. Small Cichlids: Mr. and Mrs. Frisby (Wyke) 21 pts. Riff Lake: Mr. and Mrs. Farrand (Brid.) 15 pts. Small Anabantids: M. Fawcett (York) 18 pts. Cory and Brochis: Mr. and Mrs. Frisby (Wyke) 12 pts. Loaches and Bettis: C. and S. Waller (York). **F. and M. Richardson (Scarb.):** 11 pts. **A.V. Aphosemion:** Mr. and Mrs. Tisdell (York) 20 pts. **A.O.V. Tropical:** Mr. and Mrs. Ellerker (Scarb.) 14 pts. **Breeder (Egg):** 3 and 4: M. Fawcett (York) 19 pts. **Breeder (Live):** 3 and 4: G. Andrews (Hall) 22 pts. **Pairs (Egg):** M. and P. Jordan (Brid.) 16 pts. **Goldfish and Comet:** M. Gray (Hall) 21 pts. **A.O.V. Goldwater:** Mr. and Mrs. Snowdon (York) 22 pts. **A.V. Female (Live):** W. Sowerby (Scarb.) 20 pts. **A.O.V. Killies:** E. Hooton (Scarb.) 15 pts. **Sharks and Power:** C. and S. Waller (York) 14 pts. **Breed. (Egg):** 1 and 2: Bolton and Stee (York) 20 pts. **Breed. (Live):** 1 and 2: G. Andrews (Hall) 18 pts. **Pairs (Live):** M. and P. Jordan (Brid.) 18 pts. **Fancy Goldwater:** Mrs. S. Sowerby (Scarb.) 17 pts. **A.V. Female (Egg):** D. Andrews (Wyke) 14 pts. **Furnished Mini Jar:** Mr. and Mrs. Tisdell (York) 30 pts.

**Best in Show at the following:** Ebor, Bolton and Stee (York). Wyke, Bolton and Stee (York). Bridlington, K. Webb (Scarborough). Scarborough, T. Hooton (Scarborough). York, Mr. and Mrs. Ellerker (Scarborough). Hull, M. Fawcett (York). Individual or partnership gaining most points in all classes, Mr. Fawcett (York).

Number of classes won by each Society: York 13; Scarborough 9; Hull 5; Wyke 5; Bridlington 4; Ebor 1.

**RESULTS of the 1st Darlington & District A.S. open show held 28th August.** **Best in Show:** D. Wilson (R). **Best Pair:** Mr. and Mrs. Roe (BA). **Best Breeder:** L. Bardus (H). **Class Bar:** 1, W. Taylor (N); 2, W. A. Gans (NA); 3 and 4, D. Burns (N). **Br:** 1 and 3, Wilson (R); 2 and 3, E. Clark (H); 4, B. Barrow (G). **A:** 1, D. Wilson (R); 2, S. Tipper (R); 3, L. Bardus (H); 4, B. Barrow (G). **Co:** 1, P. Kelly (NA); 2, W. Cilly (Ind.); 3, D. Clark (H); 4, P. Kelly (NA). **Ca:** 1, S. Tipper (R); 2, R. Brogdon (BA); 3, D. Wilson (R); 4, J. Wood (Ind.). **D:** 1 and 3, L. Bardus (H); 2, M. Hall (NA); 4, Mr. and Mrs. Zamir (BA). **Ds:** 1, S. King (R); 2, W. Hearnby (BA); 3, S. King (R); 4, S. Tipper (R). **De:** 1, A. Stevens (D); 2, Mr. and Mrs. Gowlind (NA); 3, C. Parry (D); 4, Mr. and Mrs. Rodway (D). **Dr:** 1, E. and L. Williams (HP); 2, Mr. and Mrs. Gowlind (NA); 3, Mr. and Mrs. Rodway (D); 4, J. and L. Wilson (R). **Ea:** 1, J. and L. Wilson (R); 2 and 3, Mr. and Mrs. Rodway (D); 4, D. Hall (NA). **Er:** 1, M. Hall (NA); 2, L. Bardus (H); 3, E. and L. Williams (HP); 4, M. Dodd (BA). **F:** 1, B. Barrow (G); 2 and 3, M. Conway (B); 4, Mr. and Mrs. Zamir (BA). **G:** 1, Mr. and Mrs. Rodway (D); 2, P. Kelly (NA); 3 and 4, J. Tindall (B). **H:** 1, W. Freeman (HS); 2, S. King (R); 3, P. Kelly (NA); 4, D. Murray (NA). **I:** 1, B. Barrow (G); 2, G. Sayers (AAA); 3, R. Brogdon (BA); 4, J. and L. Wilson (R). **K:** 1, L. Bardus (H); 2, W. Taylor (N); 3, S. Tipper (R); 4, P. Roe (B). **L:** 1, M. Brady (B); 2, D. Burns (N); 3, S. King (R); 4, W. Taylor (N). **M:** 1, A. Stirling (R); 2, A. Scott (BA); 3, Mr. and Mrs. Rodway (D); 4, J. and L. Wilson (R). **Mr:** 1, B. Barrow (G); 2, P. Kelly (NA); 3, Mr. and Mrs. Clark (R); 4, M. Brady (B). **N:** 1, J. and L. Wilson (R); 2, D. Wilson (R); 3, Mr. and Mrs. Roe (BA); 4, J. Gwent (NA). **N-ot:** 1, Mr. and Mrs. Roe (NA); 2, M. Scott (Ind.); 3, W. Silby (Ind.); 4, S. Tipper (R). **O:** 1, Mr. and Mrs. Roe (BA); 2, J. Brown (BA); 3, L. Bardus (H); 4, J. Wood (Ind.). **P:** 1, S. Kelly (NA); 2 and 4, N. Boot (L); 3, S. Tipper (R). **Q:** 1, S. King (NA); 2, R. and A. Cutler (NA); 3, M. Hall (NA); 4, S. Sayer (AAA). **R:** 1, S. and S. Cutler (NA); 2, T. Hooton (NA); 3, N. Boot (L); 4, S. King (R). **S:** 1, B. Williams (HP); 2, E. Hughes (AAA); 3, Mr. and Mrs. Roe (BA); 4, F. Rice (B). **T:** 1, S. Kelly (NA); 2, B. Clark (ST); 3, M. Conway (R); 4, Mr. and Mrs. Rodway (D). **U:** 1, Mr. and Mrs. Roe (BA); 2, D. Clark (H); 3, T. Ogden (B). **V:** 1 and 2, M. Dodd (BA); 3, P. Roe (BA); 4, D. Burns (N). **X-ot:** 1, L. Bardus (H); 2 and 3, D. Burns (N); 4, W. Freeman (HS). **Xen:** 1, L. Bardus (H);



2, J. and L. Wilson (R); 3, A. Scott (BA); 4, A. Brown (BA). Photographic Class: 1, Mr. and Mrs. Rodway (D); 2, A. Stirling (R); 3, R. Hornsby (BA); 4, N. Root (L).  
Abbreviations: R—Rodar, BA—Bishop Auckland, H—Hexham, N—Newn, NA—Newton Aycliffe, G—Garshead, D—Darlington, HP—Hartlepool, B—Bamb, HS—Houghton-le-Spring, AA—Aranfield, S—Sunderland, ST—Stockton, L—Lisicester.  
Darlington Aqua Society wishes to thank all the people and companies who sponsored us and we are extremely grateful for the kind assistance.

## SCOTLAND



Paisley & District A.S. held its last meeting on 1st November when the table show on the night was all Cichlids, dwarf and large. The results were as follows: Large Cichlids (Seniors): 1 and 3, Oscar, Ian A. Lindsay; 2, Jewel Cichlid, Bill Dunbar; 4, Angeli, Bill Dunbar. Small Cichlids (Juniors): 1, Kribensis, D. Anderson; 2 and 3, Key Hole Cichlid, 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: 041-859 5772.

## Dates for the diary

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

### JANUARY 1984

18th January: STAFFORD A.S. will be having a talk on reptiles with live specimens. Further details, ring Stafford 44406.  
20th January: CENTRAL MIDLANDS CICHLID GROUP meeting at the Cannock Youth and Community Centre, Avon Road, Cannock, Staffs. Talk by Ian Selick 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 Felling Community Centre, Crowhall Lane, Felling, Tyne and Wear. For programmes, information or further details contact: show manager, J. P. Brady, 40 Hartland Drive, Springs Estate, Birtley, Chester-Le-Street, Co. Durham DH5 2LZ. Tel: 091-410 9987.

### FEBRUARY

12th February: SHEAF VALLEY A.S. open show at Dorner Twist Drill, Cemetery Road, Sheffield.

19th February: THE BILLINGHAM AQUARIST SOCIETY'S Auction in the Billingham Community Centre. Bring your surplus fish and equipment, 11 a.m. to 1 p.m. Auction starts 1.00 p.m. 10% of proceeds to Billingham A.S. For further information contact Secretary, Mr. G. R. McGeehan. Tel: Stockton 563025.

### MARCH

4th March: KEGGLEY A.S. open show, Victoria Hall, Keggley, 40 classes. Further details from Show Secretary, Mr. B. Murray, 7 Wrenhill Avenue, Cullingworth, Bradford, West Yorkshire. Tel: (0535) 279453.  
4th March: NORTH WEST GROUP BRITISH KILLIFISH ASSOCIATION are holding their 3rd open show at the TIC-H Hall, Siddow Common, Leigh, Lancs.  
11th March: HARINGEY A.S. 2nd open show will be held at Highgate Wood Lower School, Park Road, Haringey, London N8. Further details contact Show Secretary, A. Dempsey, 31 Oakfield Road, N4. Tel: 01-272 1894.  
18th March: SKEGNESS & DISTRICT A.S. 7th open show, to be held at the Imperial Cafe (opposite Pier), North Parade, Skegness.  
24th March: EAST DULWICH A.S. annual open show at Paisley Hall, Stopford Road, Manor Place, Waltham, London SE17. For further information please contact The Secretary, D. Winder, 31 Eddystone Road, Brockley, London SE4 2DE.

### APRIL

1st April: SUDBURY A.S. open show, to be held at Neasden High School, Quanton Street, Neasden NW10. Further details and schedules from: S. Witteridge, 142 Joel Street, Northwood, Middlesex. Tel: Northwood 24450.

## THE AQUARISTS' BADGE



Re-introduced in response to numerous requests this attractive metal badge, which has a brooch type fitting, depicts an angelfish and a goldfish in silver on a blue background with a red surround bearing the words *Aqua cunae vitae ager nobis* ("Water is the Cradle of Life and the field of all our Endeavours").

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