

MAY 1983 75p

# AQUARIST

AND PONDKEEPER

The Magazine for Fishkeepers



*In this issue*

**The Armoured Conquerors  
of South America**

Spotlight on

**The Emperor Angelfish**



## COVER STORY

The marine Angelfishes belong to the Family Pomacanthidae which is made up of seven genera with about thirty species in total. Our Cover Picture shows a juvenile *Pomacanthus semicirculatus* (the Korean Angelfish). We can tell that the specimen is a juvenile because of its colour pattern which is spectacularly different to that of the adult. This rather unusual characteristic is found in most *Pomacanthus* and all *Euxiphopops* species. Although the phenomenon is now well understood and many species have been reared successfully and long enough for accurate identification of the colour phases, this has not always been the case in the past. As a result, great confusion has existed (and still does in some quarters) concerning the classification of the various Angelfish species, with different colour phases of a single species sometimes being regarded as totally different species. The very distinct coloration of the juveniles is generally held to be a protective feature which allows young fish to co-exist with relatively little risk in the presence of adult, aggressive Angels. In the aquarium, therefore, these fish must be kept either in small groups of juveniles or as single adults. *P. semicirculatus* can grow up to 40 cm (c. 16 in) in the wild.

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## AQUARIST



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## WHAT IS YOUR OPINION?



by B. Whiteside,  
B.A., A.C.P.

MISS CHRISTINE BRAGO lives at 3 Grosvenor Avenue, Newquay, Cornwall, and she tells me that she was very disturbed by what she saw when she and her fiancé visited a local fair last September. Several stalls on the site were giving away as prizes miserable creatures called goldfish. They were strung up in small plastic bags with a minute quantity of water and very little if any air. The very bright lights and loud music didn't help their state either. Miss Bragg says that it is a fact that fish won at fairs are lucky if they live more than a few weeks due to their poor state of health. She wonders how they are carted round from fair to fair and imagines their being shaken around in the back of a lorry—which can't do their sensitive nervous systems much good. She asks why stallholders can't give away something else as a prize. She knows of two cases where fish won and taken home by children were disposed of because the children's parents disapproved. She wonders if there isn't a law against such cruelty going on all over the country. Miss Bragg thinks that it is about time that we fish lovers clubbed together to have this exploitation of the inoffensive goldfish abolished. She concludes her letter by saying that she has one 5ft. coldwater tank, a community tank and two cichlid tanks and she wouldn't swap her fish for the world. (In-

terested parties might care to write to Miss Bragg, B.W.)

Master Lawrence Sedler resides at 93 Parsonage Lane, Enfield, Middlesex, and he has something to say about snakes. He is particularly interested in garter snakes. He says that they come in many varieties but that almost all are simple to keep and are to be highly recommended for the beginner. Lawrence says that the most important thing with snakes as with fish is to buy healthy specimens. They should have clear eyes, except prior to sloughing, the tongue should have its forks separate, and it should be flicked out every few seconds. The snake should also be moving well and attentive to things moving around it; lethargic snakes require further investigation before being bought. Lawrence says that any snake should be seen to be feeding before being bought; he feels that "the dealer's word can never be relied upon." A non-feeding snake may have a variety of diseases, or none, but it is best not to buy.

Master Sedler goes on to say that a 3ft. garter snake can be kept in a 2ft. aquarium. He states that few garter snakes grow longer than 3ft.; and that most aquarists have a spare 2ft. tank that leaks. All that is needed in the 2ft. tank is a layer of newspaper on the base; never earth, etc., because such materials retain water and allow parasites to breed. Newspaper is easily replaced when fouled; and although not pleasing to the eye is certainly pleasing to the snake. Something is required for the snake to sleep in. His snakes sleep in an old catering coffee jar with a hold cut in it. The cage must be covered well as the snakes are great escapers; but ventilation and heat must be provided. Lawrence keeps his at 80°F using a 15 watt bulb on night and day. Food should consist of earthworms and fish—such as sprats and minnows. They should be supplied about five days per week and supplemented with vitamin B complex to prevent possible paralysis. Water should be present at all times as garter snakes love water to bathe in and to drink.

Lawrence states that these are general

guidelines for keeping snakes and he recommends the book *Care of Reptiles and Amphibians in Captivity* by Christopher Mattison. Master Sedler tells me that his mother likes his small snakes but seems a bit put off by the thought of a python eating rats in her house. "I just can't understand it," says Lawrence. "These women are strange!"

Mr. D. Fanshaw's address is 36 Holmfield, Burbage, Buxton, Derbys. When he decided to dig a pond he first got permission. It was a cold day when he bought a pond liner. He began by removing the turf from the lawn near the front door; and then he had a three weeks' wait until the subsequent snow cleared away. The pond liner he had purchased was about 10ft. x 8ft. to make a pond of 6ft. x 4ft. x 18in. deep; but he decided to dig the pond hole 7ft. x 5ft. x 24in. deep and he filled the liner with about 300 gallons—he says he can't measure in litres. He first stocked the pond with two goldfish, one golden orfe, and a koi which he already kept in a small tank. They were soon joined by five more fish. They lived in the pond until a water-lily was purchased and the water was changed; and a second water-lily was bought three months later.

Time passed, and winter came



*Nymphoides aquatica*—  
banana plant



*Nymphoides aquatica*—underside of floating leaf

again—and with it 2in. of ice; so a pond heater was purchased—but not in time to save six of his fish. Unfortunately he killed one of his goldfish himself as he did not realise it was in its hibernation state. This was a loss he did not expect and he considered selling his remaining fish and plants; but his love for the hobby prevented that and he stocked the pond with only six fish—including a coldwater catfish—and some plants to oxygenate the pond. Last winter, just after the first snow fell, he was taking no chances so he drained the pond and brought the fish indoors. He asks for readers' opinions on his actions.

Photographs 1 and 2 show *Nymphoides aquatica*, the underwater banana plant. A look at the bottom of photograph 1 will reveal the peculiar rhizome of the plant. It consists of a bunch of tubers which look like a bunch of bananas—which is where the plant got its common name, although it has no connection whatsoever with ordinary banana plants. Stems stretching out of the top of the print belonged to floating leaves. Photograph 2 shows the reverse of one of my plants floating leaves—with a delightful purple colour and a most interesting surface texture. I understand that bright light tends to encourage the growth of floating leaves.

Photograph 3 shows a species that I have never grown before. It's *Bol-*

*bitis heudelotii*, a water fern from Guinea, in Africa. It does not appear to have a common name. Perhaps African fern would be a suitable common name for it. There are two separate plants in my photograph: one on top of the rock and one in the gravel. Each plant cost me £1.50—so you are looking at £3.00 worth of African fern. The plants are only a few inches high. Apparently they grow best attached to something—such as the rock—so I have moved the plant in the foreground to another site. The plant appeals to me. I hope it will make an interesting addition to my other ferns—Indian fern and Java fern. I may report my findings in a future *Plant Profile* if permitted.

The fourth photograph shows a few plants of *Heteranthera zosterifolia*, a species from Brazil. It's a species that I've wished to try for many years but have never come across before.



*Bolbitis heudelotii*—African fern

Five plants cost 45p; and the species seems rather frail. I hope it will strengthen somewhat when it settles in my tanks. If I recall correctly, the banana plant cost 75p. Please drop me a line if you would like me to prepare a plant profile article on any of the above species. I was interested to note that one of the Sunday 'heavies' either pinched, or also invented, my title for plant articles.

No. 26 Temperance Terrace, Grahamsley, Crook, Co. Durham, heads a letter I received from Mr. Paul Douglas Roe—and I wish other letter writers would tell me their Christian or

first name as it makes it easier to write about the contents of letters in reported speech when one can jump from Christian name to Mister, Mistress or Master. Paul says that some time has passed since he wrote to me so he hopes to let us know how his interest in the hobby is developing. Last time he wrote he had just got married and had been demoted from a fish house containing 27 tanks to four tanks in his house. Since then he has managed to get his wife to develop her interest and he now has eight tropical aquaria and one coldwater aquarium in his home; and he has just got his wife's approval for his constructing a fish house when they move to a new house. He says that the split water helped to persuade his wife!

In his coldwater tank he has a large pair of Sarasa comet goldfish which spawned on two occasions early last year and that resulted in his digging up all his garden and constructing ponds to accommodate the thousands of fry. He managed to raise about 50 decent fish which were just starting to get their full colour when he wrote to me. As he finds large goldfish very dirty in an aquarium he uses an outside power filter to keep the water clean; and he finds that the bigger the goldfish the more aeration he has to supply. He changes 25% of the water each week and finds that the water changes trigger off spawning in the spring.

In his tropical tanks he was keeping and breeding a lot of livebearers; but on a visit to the Aquarist Festival at Doncaster last year that changed. Whilst examining a trade stand of Rift Valley cichlids he saw a fish called *Haplochromis boadzulu* and he was struck immediately by the colours of the male fish. Although Paul had kept the Mbuna before and bred them successfully, he had never kept any of the Utaka or free-swimming fishes of the African lakes. He decided to buy a pair of *H. boadzulu*—even though he almost had to take out a second mortgage. When he got home he placed the pair of fish in a 4ft. tank which, conveniently, contained hard water of pH 7.9. Unfortunately the male fish was very nervous and splashed about at

the top of the tank, hitting the cover; he began to go crazy and eventually damaged himself so badly that he subsequently died. Later the female began to act in the same way; sores appeared on her and later fungus grew on them and she died. Subsequently he bought some young *Haplochromis electricus* and kept them in the same tank. Those grew exceptionally well; and he added a few more fish to the tank—which also did well.

Mr. Roe decided to have another go with his favourites and made a long trip to south Yorkshire to acquire another pair of *H. boadzulu*. A bonus was the fact that the female was brooding eggs in her mouth. Sadly, the eggs were eaten on the way home; but the pair were added to the 4ft. tank with the others and unlike the first pair they settled down almost immediately. The male was rather timid but did not behave like the first one. By that stage the Rift Valley bug had bitten Mr. Roe and a tank of Mbuna—rock-dwelling cichlids—followed from the Utaka. He set up a breeding community consisting of pairs of: *Melanochromis johanni*, *Pseudotropheus lombardoi*, *P. livingstoni*, *P. pindani* and *M. chipokae*. He had success after a month when the latter female was found to be carrying eggs in her mouth. She was put into a brooding tank and spat out 37 fry after 28

days. All were doing well at the time of writing.

Four days prior to writing to me Mr. Roe was overjoyed when he looked into the Utaka tank and saw the female *H. boadzulu* carrying a mouthful of eggs. He left her for a couple of days in the community tank and then set up a brooding tank using water from the community tank. The female fish was put into that tank and at the time of writing appeared settled and was still brooding the eggs in her mouth.

Mr. Roe concludes by saying that he is still show secretary of Bishop Auckland Aquarist Society whose annual show was held on 10th April. The society meets every other Monday at 7.30 p.m. at Wear Valley Hotel, Bishop Auckland, and any aquarist, beginner or experienced, will be made very welcome.

I wish to sign off by saying that I accept no responsibility for the views expressed by those who write to me, e.g. I know little or nothing about snakes.

Well, that's this month's space filled up. My apologies to the many people whose letters I have been unable to include. I hope it will not stop readers from writing to me in the future. Even though I may not have space in which to publish many letters now I still enjoy getting them—and I still read them carefully. Shorter



*Heteranthera zosterifolia*

letters now have an even better chance of getting published. For a future issue please send me your opinions on keeping reptiles; breeding tetras; cultivating aquatic ferns; livefoods; and aquarium lighting. Good-bye until next month.

## NEXT MONTH

**DONT MISS OUR SPECIAL COLDWATER ISSUE** WHICH WILL INCLUDE

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# THE CONSTRUCTION OF AN ECONOMIC FISH HOUSE

By Dr Peter A. Lewis, PhD  
Part 4

LAST month's article featured the construction of a brick fish house and described what was probably my most ambitious fish house project to date. This month I would like to describe an easier project and one that most likely will apply to 80% of the fish house projects currently being planned or already in operation. That is the use of a prefabricated wooden shed commonly supplied in sections by D-I-Y or garden supply houses.

Such sheds, with only minor modifications, make ideal project centres and can be purchased in a variety of sizes to accommodate both the size requirement and cost limitation of the hobbyist. A popular size is the 6 foot by 8 foot Pent roof shed made out of either standard whitewood (pine) or the more expensive Redwood or Cedar. Personally I feel that this is just a little narrow and I prefer either a 7 foot by 8 foot, or better still, a 7 foot by 9 foot shed. This additional one foot in width gives that extra few inches needed to add insulation whilst also allowing for a slightly wider corridor down the centre of the fish house. Of course, an 8 foot by 12 foot shed is going one better and really will accommodate an array of both breeding and rearing tanks.

When the hobbyist has decided upon the shed that meets his overall requirements the next step is to decide on the location of the shed in relationship to the house. Remember that a supply of both water and electricity will be needed and the further the shed is from the house the more

expensive will be the provision of these supplies.

The next step after choosing the site is to decide how you intend to support the shed. Should you build a concrete slab or a perimeter concrete wall on which the shed will stand. Either method is acceptable with the concrete slab possibly being easier since tolerances do not have to be as exact. If a slab is to be installed first mark out the floor area of the shed on the chosen site then increase this area by 6 inches all around to give a final rectangle that overlaps the shed floor by 6 inches. Dig out this marked area to a depth of 12 inches and support the sides with rough cut timber to act as shoring for the concrete. Next,

back fill with hardcore, rubble, broken bricks, etc. to a depth of 6 inches. At this stage thought must be given to the installation of some type of "soak away" drain for removing unwanted water from the fish house. I have always chosen an area towards the back and centre of the shed floor and dug out a pit some two foot square and two to three feet deep which I have back-filled with a mixture of large gravel and broken house bricks or broken concrete blocks. Into this "soak-away" pit must then be supported a section of 4 inch PVC drain using either an "S" trap or a "P" trap design. Position this such that the top will lie just above the concrete floor you are intending to pour. Once this drain has been positioned the excavation can be filled and levelled with a concrete mix to a depth of 6 inches. A good mix is 1 part Portland cement to 3 parts gravel aggregate to 2 parts sharp sand mixed and poured wet to make tamping and leveling easier. Use of steel mesh or bars in this 6 inch slab is optional and will do much to strengthen and reinforce the slab.

A point to be wary of when pouring the slab and laying the hardcore is to ensure that the ground is stable and firm on which the slab is poured. Ideally the rectangle should be excavated to a depth such that the clay layer



A Fish House built out of brick and concrete block and blending nicely with the house and deck area. This project gave a Fish House 7 ft. 8 inches wide and 11 ft. long. No problems were encountered with a service supply since water and electricity were just run in through the house wall

is reached. Remember that water is heavy and a weight amounting to several tons will soon be reached with a relatively modest tank set up. An advantage of a slab foundation is, of course, the fact that the slab doubles as a floor for the shed thus cutting out the expense of purchasing a wooden floor.

A second foundation for the shed can be erected using a concrete block perimeter wall on which the shed stands. Here a wall is built using 8 in. hollow concrete blocks allowing a 2 inch overlap around the shed perimeter. The concrete blocks, once laid, are back filled with a fine aggregate, cement and sand mix poured wet into the hollow blocks to add strength and rigidity to the structure. At 2 foot intervals are sunk anchor bolts such that once set in the concrete the shed base can be drilled and anchored to these bolts. With this type of foundation the shed must be fitted with a wooden floor. Inside the concrete perimeter wall is placed a 3-4 mil polythene vapour barrier which is in turn covered with a 2-3 inch layer of dry sand to keep the barrier firmly in place. Remember to continue the polythene up the sides of the blocks such that the base of the shed actually rests on the polythene on top of the concrete perimeter foundation. Both types of foundation are illustrated in figure 1.

The next phase in construction is the erection of the shed proper for which the services of a willing volunteer are most certainly required. A prefabricated 7 foot by 8 foot shed normally comes in five or six separate sections dependant upon the type of roof chosen. Each section is bolted together on the foundation and then the whole shed is bolted to the lag bolts previously sunk into the concrete slab or foundation block. Next, on goes the roof and up goes the door and within a few short hours the shed is up.

Now you have a sturdy garden shed—let's see about converting it into a fish house. As usual first and foremost comes the insulation. Invariably, the upright framing used by the shed manufacturer is rarely thicker than 1½



A Fish House constructed as described in the article using a proprietary garden shed. Note the neatly arranged tanks and work corridor. (The Fish House shown belonged to Derek Harrop of Huddersfield)

inches. This cannot accommodate adequate insulation so the void must be made deeper by nailing rough cut, recovered timber battens to the shed uprights to increase the depth to a total of 3 inches. That is, the distance between the inner wall and the front of the newly installed batten should be a minimum of 3 inches. Next fill these voids internally with Rock Wool or Fibre Glass insulation that is 3 inches thick to give an insulation value of R11. A polythene vapour barrier is then stapled across these uprights

to form a complete impervious barrier on the warm side of the insulation. Oil tempered ½ inch hardboard or a similar wall board is then nailed between the uprights using galvanised or aluminium nails which will resist rusting and not form unsightly rust spots down the fish house walls.

Next comes the ceiling and once again insulation is installed to completely fill the roof void followed by the all important polythene vapour barrier. For the ceiling I have always been fortunate enough to obtain

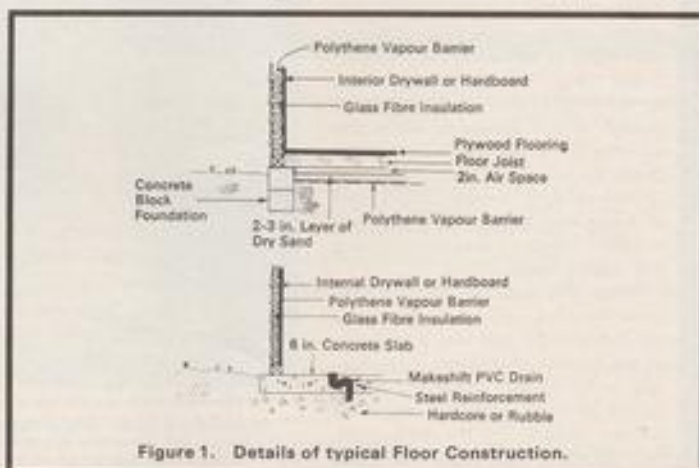


Figure 1. Details of typical Floor Construction.

sufficiently damaged 4 foot by 2 foot ceramic tiles that I have nailed to support battens crossed across the ceiling at 16 inch centres. These tiles, nailed in place using 1½ inch flat head aluminium nails, give the fish house a real professional appearance when painted with a coat of white latex house paint to hide the nail heads and any blemishes. Figure 2 illustrates the basic shed shell with no windows and insulated as discussed. The roof shown is a ridge roof and has a lot of dead space in the void that must be insulated. Again remember that money spent now on adequate insulation will result in considerable savings in future years as heating costs rise.

Insulation of the shelving to hold the fish tanks is relatively simple as shown in figure 3. Basically we need a working corridor down the centre of the fish house with easily accessible tanks on either side of this corridor. I prefer to construct open slat type shelves as this cuts down a little on the cost of the timber needed. Again I use 2 inch by 4 inch recovered timber to construct the basic shelving skeleton and then infill the horizontal shelf sections on which the tanks will rest with ½ inch plywood slats 3-4 inches wide. If the width of the shed is 7 feet then, after allowing for the work corridor (3 feet) and the added wall insulation (8 inches) it should be possible to build one series of shelves to take a bay of tanks 2 feet wide and another to take a series 15 inches wide.

Basically, if the shed is 7 foot by 9 feet and has a 6 foot 6 inch ceiling then one plan could consist of a series of tanks installed lengthways at 2 foot deep, 15 inches wide and 15 inches high with a second series installed widthways at 15 inches deep, 2 foot wide and 15 inches high. If the shelves are approximately one inch thick, the first shelf is 8 inches from the floor, a gap of 7 inches is allowed between the top of the tank and the bottom of the shelf above and each tank is 15 inches deep then the following arrangement is possible:

Bay 1: Consisting of 3 shelves 2 feet deep.

Each shelf takes: 5 tanks 2 ft. × 15 in. × 15 in. deep 1 tank 2 ft. ×

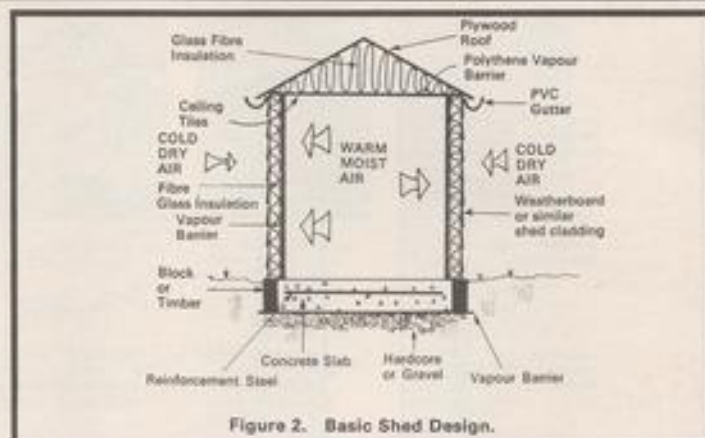


Figure 2. Basic Shed Design.



Internal view of a well constructed, well organised and above all well insulated Fish House. Note the shelving for the tanks is angle iron sunk into the concrete block wall and given a liberal coat of paint. The interior walls of this project were actually wallpapered after insulating and covering with wallboard just to ensure all cracks and leaks were sealed thus maximising the insulation

12 in. × 15 in. deep.

Bay 2: Consisting of 3 shelves 15 inches deep.

Each shelf takes: 3 tanks 2 ft. × 15 in. × 15 in. deep 1 tank 15 in. × 15 in. × 15 in. deep.

Thus the fish house has a basic tank size of 2 ft. × 15 in. × 15 in. which is either located widthways or lengthways on the shelving dependant upon the side of the fish house the tank is installed. Obviously, to fully take up the available space a few

oddball size tanks will need to be made such as the 15 in. cube to sit on the 15 in. wide bay.

The set up described for a 7 foot by 9 foot fully insulated shed thus provides 30 tanks and an adequate working corridor, (24 tanks 2 ft. × 15 in. × 15 in., 3 tanks 2 ft. × 12 in. × 15 in. and, 3 tanks 15 in. × 15 in. × 15 in.). Incidentally the weight of water to fill these tanks amounts to 5,520 pounds (2,500 kg) ie; 2½ tonnes of water.



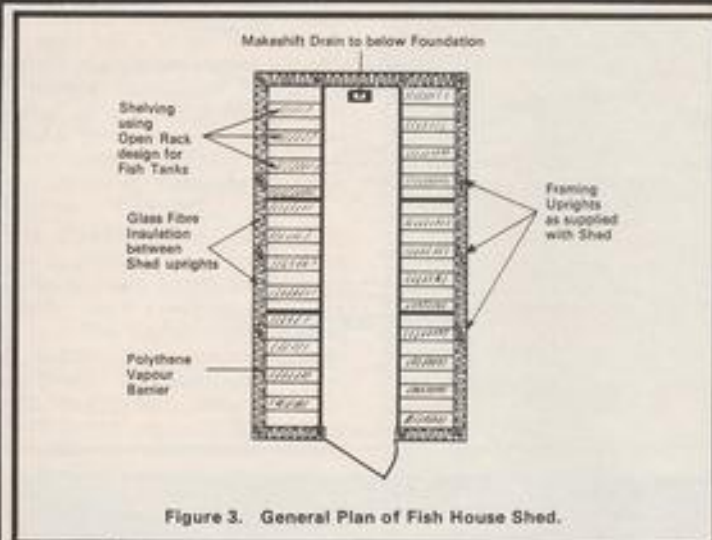


Figure 3. General Plan of Fish House Shed.

Obviously any combination or permutation of tanks can be made dependant upon the types of fish to be kept and the number to be bred and reared for sale. Additionally a sacrifice can be made in the work corridor to allow for wider tanks. A small, movable bench seat in the work corridor is almost a necessity otherwise working in the fish house becomes too much of a chore. Additionally small work boards for chopping up food or resting jars, food tins, bags, etc. should be installed off the tank framing to give needed work space and storage space. An 8 in. gap under the last shelf makes an ideal storage area for white worm or similar cultures. Generally the work corridor should be as wide as the fish house door.

Ventilation during the hot summer months for this type of fish house is easily provided by the installation of a small electric extraction fan in the wall opposite the entrance.

The types of roof available deserves some discussion since each requires different insulation and each provides different head room in the fish house. Figure 4 illustrates three types of roof that are encountered. The first is my particular favourite and is a Pent roof. This roof is easy to insulate

and offers maximum head room. Additionally, because of the gentle slope of the roof a few hundred pounds of  $\frac{1}{4}$  in. to  $\frac{1}{2}$  in. limestone gravel can be scattered on it. This white gravel aids in reflecting the summer

heat and in addition provides increased surface area for evaporation of rain-water from the roof.

The second common type of roof is a Ridge or Apex roof which, as discussed, has a large unused void that needs insulating as illustrated.

Finally a "Dutch Barn" type roof is shown. This is an uncommon roof but is very attractive and makes a pleasant sight in anyones garden. Insulation of the roof as illustrated leaves a central internal apex that can be the location of a suspended shelf for storing fish food or reference books etc.

Again, remember to fit appropriate guttering to your shed roof. If a suitable mesh trap is then fitted into the gutter's downspout as a leaf and debris trap, a rain barrel can then be placed at the base of the downspout to collect rain water for use with your fish charges or for attempting the culture of a live food such as *daphnia*.

Next month I will go into details of an even simpler fish house—that is one constructed in an existing room or building.

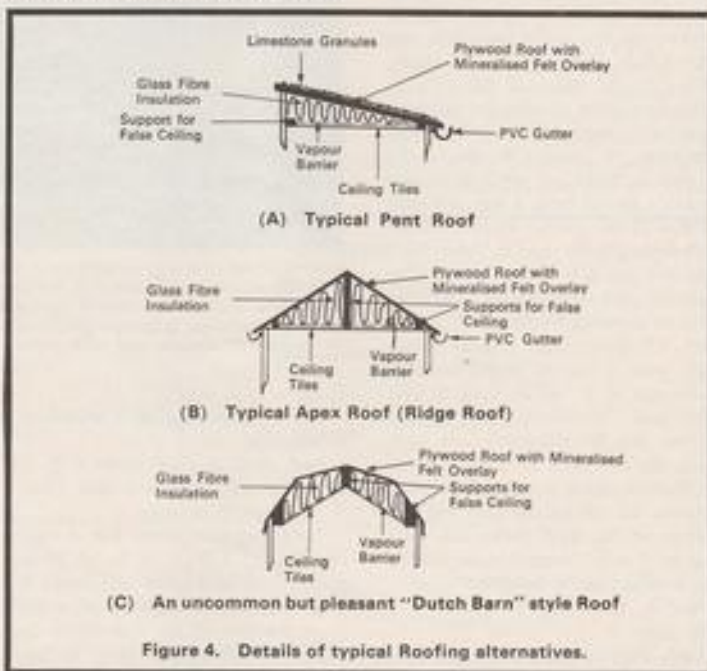


Figure 4. Details of typical Roofing alternatives.

# Lion Fishes

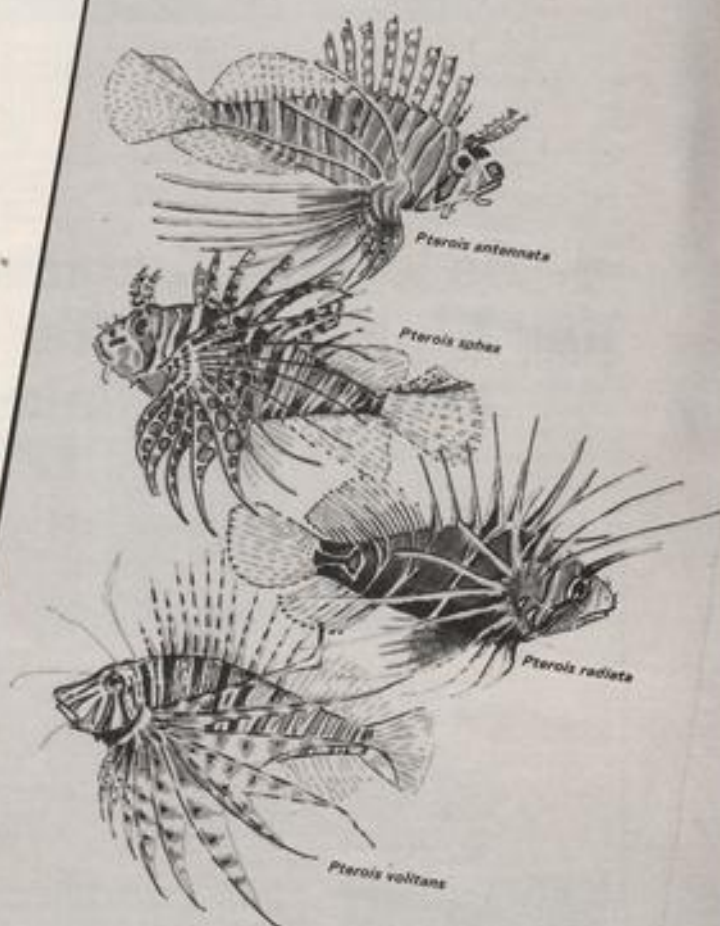
by David Morgan

Most marine aquarists will be impressed by the Lion fishes. Many opt to own one. I think the best marine display I have ever seen consisted of three specimens in a 48 in. x 15 in. x 18 in. aquarium.

Sadly, I have found some of them not the easiest of fish to keep. Fortunately much good advice has been written, by more notable persons than I, and has been published in books and this magazine. This, then, is merely a compilation of notes I have made which may be of interest to others.

There are eight species of Lion fish, belonging to three different genera, which in turn belong to the very large family of Scorpion fishes. Of these eight species, six are regularly imported to Britain, four from the genus *Pterois*, which may be recognised by the extended dorsal and pectoral rays, and two from *Denrochirus*, in which the pectoral rays may be seen to branch, and are much more fully connected by the fin membrane.

The most publicised, the most important, and as a result, the most well known fact about these animals is that the dorsal spines are highly venomous, and therefore must be avoided at all times. If stung, a tourniquet should be applied, the affected part immersed immediately in the hottest water the limb can stand (don't add to the problem by scalding), and a quick trip taken to the hospital if necessary. A visit to the doctor is required even if you're lucky and don't get a severe reaction as secondary infection is likely and can be prevented by another jab in, well, less accessible parts. Just don't take chances and there isn't any danger.



Another fact, less well known, is that all these fishes are quite intolerant of bright light. Bright lighting will cause drastic loss of colour and can actually damage the eyes. This alone makes them quite unsuitable for inclusion in many community systems. A single Growlux tube of small capacity or a low power incandescent bulb will be adequate.

An alternative idea, used most effectively in the set up I mentioned earlier, is to provide a large shaded area by placing an obstruction on the cover glasses of the aquarium. This obstruction should blot out three quarters of the light entering the tank, and will permit the inclusion of such things as tubeworms, which provide as stunning a complement as can be imagined. One suggestion is a couple of layers of sticky-backed plastic. Whatever is used must be chosen carefully as it must not present a contamination risk, nor should it be a fire risk.

If other fishes are to be included choose them carefully. Quite obviously small fishes, even other Lion fishes, will be eaten, so choice is limited to non-aggressive larger specimens. Some groupers, of similar habit and size, may be impressive companions; prawns and crabs will simply be eaten.

It is not difficult to maintain excellent water conditions when keeping just two or three specimens together but always remember to net and bag your Lion fish when you have to put your hands in the tank.

#### *Pterois antennata*

Commonly called the Spotfin Lion fish this species is found over a wide area including the Indian Ocean, the Philippines and Polynesia, but not from Hawaii; though the difference is slight, specimens from Hawaii are always *P. sphex*.

Though appearing placid most of the time, the most notable exception being meal times, it can be a really nasty little devil if provoked. When I watched one being netted in a local shop it suddenly became transformed from shimmering beauty to vicious hostility when it speared the net

with its dorsal rays! Quite an eye opener.

This is a shallow water inhabitant that is usually found in pairs or small aggregations. It feeds on crustacea and small fish and quickly learns to accept dead food in the aquarium. The use of a piece of cotton with a sliver of fish or prawn on the end is usually effective, but if nothing happens fall back to live food. Grows to about 8 in. (200mm).

#### *Pterois radiata*

This is the Whitefin Lion fish. Another name I once saw described it as the Chocolate Lion which is really more appropriate in my opinion, since the dark bars and fin membranes are a rich chocolate brown. I think this is by far the most handsome Lion fish.

Easily identified by colour and pattern, it also has a horizontal bar on the rear of its body. Found throughout the Red Sea and the Tropical Indo-Pacific, newly captured specimens may be difficult to feed at first. It should be remembered that naturally this group of fishes hunt nocturnally. It is therefore relatively easy to duplicate these conditions when acclimating to aquarium life. Start a programme of feeding by first of all simulating night. Turn off the aquarium lights early evening, and shield the tank with layers of newspaper or a blanket. Then introduce the food. Use small guppies, or even better, a few saline tolerant mollies. The mollies, when properly transferred from fresh to saltwater, will probably live indefinitely in the marine conditions and should induce the Lion fish to feed within a couple of days. Wait until the pattern is established then try dangling dead food. Only when feeding is no longer a problem will you gradually reduce the darkness and bring the active half of the fishes' day to the daylight hours. Of course adult brine shrimp and "glass worms" when available may also be taken. Have a word with the supplier as to what, if anything, the fish is taking.

This is a larger species which will easily attain a length of 9 in. to

10 in. (250mm) and will swallow fishes almost half its length.

#### *Pterois sphex*

This is the Hawaiian Lion fish. As I have already mentioned it closely resembles *P. antennata*. However, the circular spots on its pectoral fins are usually much more prominent. These spots, in fact, do make it very worthy of collection in its own right.

What I have noted regarding *P. antennata* also applies here, except this species grows a little larger, being comparable to *P. radiata*.

#### *Pterois volitans*

Called the Turkey fish, the Peacock Lion fish, and sometimes the Butterfly Cod (who christened it that?) this is certainly the most notorious representative of the Lion fishes. It should be—it grows up to 15 in. (385mm) and reports of victims of its sting dying are not uncommon. Investigations into such deaths have shown deep penetration by many of the dorsal spines, usually in the feet, so the fish must have been fully trodden on. I wonder what kind of shape the poor fish was in after that? If you must paddle in the corner of the living room wear your wellies.

I don't mean to be flippant, but if you put your finger in a flame, you do get burnt.

This species is found throughout the tropical Indo-Pacific, and though a real beauty, is liable to outgrow most home aquariums in time.

The two Lion fishes from the genus *Dendrochirus* are usually referred to as Dwarf Lion fishes, and are found in the Indo-Pacific.

#### *Dendrochirus brachypterus*

Although very pretty this species isn't often offered for sale because aquarists generally invest in the other species. By all accounts it's amiable enough, but has a marked preference for live food. It is very hardy, however, and might be a good choice to begin with in view of its relatively small size—about 7 in. (175mm) max.

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From a  
Naturalist's  
Notebook



by Eric Hardy

Most owners of a salt-water tropical aquarium have watched the small blue and black-striped Cleaner Wrasse picking parasitic copepods from skin and gills, and dead tissue, from other, larger fishes, or "doctoring" as the saying goes. In its native Pacific and Red Sea waters it is seen entering the mouths of groupers and moray eels for this "cleaning" purpose. Young Spanish Hogfish, young Damselfish, Californian Sea and Kelp Perches and Senoritas may be seen doing this; but the habit is fatal if they eat the poisonous mucus from Cowfish or White-Spotted Puffers.

When male cleaner wrasses which dominate little shoals of females die, the dominant female changes to male within a few hours. Some shrimps from underwater caves clean sleeping fish like the Moray eel, and lobsters. Most "cleaners" have distinctive colours and fish with parasites sometimes present themselves for cleaning, even larger sharks opening their mouths for cleaners to enter into gill-chambers without danger.

This practice is a form of symbiosis, mutual benefit without harm among rock and shore fishes. Differences in the habit among different cleaner fish avoid much overlap in their cleaning areas. It was probably adapted from an omnivorous diet of tiny free-living organisms picked from the bed or midwater. Only a few of many senatorias present in an area will clean at any one time, and unlike some other cleaners, they don't centre their activity around a well-defined cleaning station. Limbaugh and Feder of California

University, etc, first showed that some fishes congregate in favoured locations for feeding. Fishes crowd around a cleaner, vigorously soliciting its services, the Hawaiian Labroides cleaner for instance. Nor is it confined to shallow, open water, for kelp perch are important cleaners which concentrate in seaweed beds off California. The only other cleaners there, white sea-perch only occasionally indulge in the activity. Ten-inch Senatorias (diurnal labrids) generally clean a number of different fish, but individual cleaners tend to concentrate on one species, usually the most abundant in the area, although only those heavily infested with external parasites.

The sharp-nosed sea-perch has a picking manner of feeding off rocks and the bottom like the senatoria, but its short, straight conical teeth are less specialised for picking and it eats a lot of free swimming tiny copepod crustaceans. A similar picking manner of feeding characterises the kelp-perch, but it takes a lot of suspended

material though its upturned snout has teeth projected forward like the senatorias.

Instead of establishing assembly stations to receive other fishes seeking to be cleaned, senatorias approach and clean fish, even yellowtail tuna, whenever they encounter them as they move through their local area. Cleaning is not confined to their younger years, as in some cleaners. They pick off parasites just as they pick small prey off rock or seaweed, using long, forward-projecting canine teeth in their pointed snouts. Their prey-fish will pause awhile during cleaning on their migration through. Blacksmith fish which predominate in their "prey"

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With short, straight conical teeth, unlike the forward-projecting teeth with the pointed snout of most "cleaners", a sharp-nosed sea-perch (*Phanerodon*) inspects a Californian blacksmith (*Chromis*) which hovers to solicit "cleaning"

(Photo: E. S. Hobson)

ONLY the most inhospitable areas of South America hold back the armoured Callichthyids, even 4000 metres up in the Peruvian Andes is habitable for *Corydoras*, the cool temperatures not proving a barrier.

Once one has discovered the variations within the genus *Corydoras* a great many questions follow. In December 1982 the valid species count reached 100 and the prospect of more to be described is a certainty. Almost all the collective scientific information on these dwarf, bony-plated catfish is centred at the University of Amsterdam, where for almost two decades Dr H. Nijssen, curator of fishes and Dr I. J. H. Isbrücker his co-worker,

The Dutch scientists have newly described a further four species, *Corydoras prionotus* Nijssen & Isbrücker, 1980 *Corydoras condiscipulus* *Corydoras narcissus* and *Corydoras robustus* Nijssen and Isbrücker, 1980. (The middle of this trio, derived its name for those people who enjoy having beautiful species named after them!) and Dr W. Burgess resisted temptation and described *Corydoras adolfoi* 1982 (only a month after its discovery) March T.F.H. thus taking the total of species to the one hundred mark.

The second revision episode is a review and re-illustration of many lesser known drawings of *Corydoras*

blotched body pattern.

I referred to three variations in the colour pattern of *Corydoras barbatus* (one of the largest species), in my article, 'Brazil, an Aquarist Dream (*Aquarist and Pondkeeper* May 1980). It is important that I put the record straight and admit I should have declared *Dr Nijssen and Dr Isbrücker discovered three variations* in colour patterns—it was remiss of me to give the wrong impression. I should have written that I was fortunate in seeing three types when I visited Brazil. One type shown to me was collected by Dr H. Axelrod in a creek near Rio De Janeiro—these four inch specimens displayed a striking white stripe which passes centrally from the snout down the back. I also saw these types preserved in the collections of São Paulo Museum.

That *Corydoras* have, in the main, distinct colour patterns indicates the need for species to recognise each other and probably serves as a method of camouflage. I have often thought, for instance, in *Corydoras arcuatus* Elwin, 1939, the parallel, black, dorsal to beyond the caudal peduncle lines, if viewed from above by a would-be predator in the clear, white waters of Peru, could easily be mistaken for a piece of debris, a twig or suchlike. Good species recognition would ensure breeding runs true and maintains the population.

In aquarium conditions I have noted that most species will compose an overall shoal but within a main group, types will make up an individual shoal, only scattering when under threat (a hand or net placed inside the aquarium). In one test aquarium I placed nine *Corydoras arcuatus*, seven *Corydoras melini*, Lonnberg & Rendahl, 1930 (of interest because of the similarity in colour pattern to *C. arcuatus*—strong black line pattern) and a dozen assorted species *Corydoras melanistius melanistius*, Regan, 1912 *Corydoras metae* Eigenmann, 1914 (very similar colour pattern to *C. melini*) and *Corydoras leucomelas*, Eismann and Allan, 1942. The two main

## Armoured Conquerors of South America by David Sands

have sifted, sorted, catalogued and exchanged with the world's leading Natural History Museums. They have confirmed all the species described since Bloch provided the type for the genus, *Corydoras punctatus* (*Cataphractus punctatus*) in 1794.

The first episode of Nijssen and Isbrücker's revision represents the back bone of taxonomic work, a chronological enumeration of the nominal species and subspecies of *Corydoras* and was published in 1979. This paper confirmed 95 valid species/subspecies and invalidated 28 as duplicates (synonyms) of already described species. Some very well worn names were discovered, junior synonyms of others: *Corydoras myersi*, *Corydoras microps* and *Corydoras wotroi* (to name a trio known to aquarists); these duplicated *Corydoras rabaui*, La Monte, 1941, *Corydoras aeneus* Gill, 1858 and *Corydoras melanistius melanistius* Frazer Brunner, 1947 respectively.

described pre-war; the paper also proposed to group all the *Corydoras* under five major headings as follows: *punctatus* — *barbatus* — *aeneus* — *elegans* and *acutus* groups. The primary reason for the creation of these divisions is on locality and distribution detail. The scientists first unveiled this idea to the public at a memorable convention of the Catfish Association of Great Britain in 1978—Dr Nijssen first proposed the divisions in his revision of the 'Surinam representatives of the genus *Corydoras*' in 1967.

The variation in the colour patterns of 100 species of *Corydoras* is a delight to the interested; even a frequently seen well distributed species, *Corydoras aeneus*, has a warm bronze cast. *Corydoras barbatus* (Quoy & Gaimard, 1824) has a simple distribution by comparison, found only in the coastal creeks of Southern Brazil; this species is arguably the most ornate with populations showing several variations on a black-on-gold

species always clung together and showed little interest in mixing with the other species groups, and even foraged for food in units separated from each other. (Photograph 4 illustrates the group of *Corydoras melini*).

There have been no published accounts of hybridisation of *Corydoras* in aquaria although 34 species have been bred in aquarium conditions. The only mention in scientific literature is found, not surprisingly, in Dr Nijssen's revision of the Surinam *Corydoras* published in 1967.

This work contains a figure of a hybrid between (the then) sub-species *Corydoras bondi coppemansis* Nijssen, 1970 and *Corydoras schwartzi surinamensis* (later upgraded to the rank of species—*Corydoras surinamensis*, Nijssen, 1970). The measurements recorded at the time suggested the single specimen was intermediate between the two species/subspecies. How this aberrant specimen now stands is yet to be written.

In the major South American rivers where *Corydoras* are found it is usual to find several different species in close proximity; invariably the populations will contain a snouted species (assigned to the acutus group) and several round-nosed species. In aquaria, snouted species illustrate well the advantages of being able to penetrate the substrate to find food where round-snouted species would be unable to.

In São Paulo, Southern Brazil (my sole experience of collecting *Corydoras*) the already established localities yielded *Corydoras barbatus* and *Corydoras macropterus*, Regan, 1913 as sympatric. These species were found in tea coloured creeks (Nijssen recorded no species found in the similar tea coloured creeks of Surinam, sampled) and had dark body colour to match the water. Both species share a rare characteristic that sexually mature males display head bristles (a sexual dimorphism common to Loricariids, the South American sucker mouth catfish). The fish collector I worked



*Aspidorus poecilius*. Fourteen species known. These dwarf catfish can be easily mistaken for *Corydoras*. Members of the genus are found in Southern Brazil



*Corydoras arcuatus*. One hundred species of *Corydoras* known. The skunk catfish has distinct line patterns when viewed from above by a would-be predator could mean confusion in being mistaken for a twig



*Brochis multiradiatus*. Two species of *Brochis* known. The soft dorsal rays outnumber the seven found in *Corydoras*—more so in this species which has nineteen. Named the hog-nosed Catfish for obvious reasons



A group of *Corydoras melini*. Kept together and used to add information on the shoaling behaviour of *Corydoras*

with went to great pains to explain that the unique weather conditions of the State of São Paulo—the region receives a 'present' of low pressure—cool temperatures after a climb and fall over the Peruvian Andes. I know nothing of meteorological things but it is true that many of the species of fish found in Southern Brazil, in particular those restricted to the coastal streams, are found nowhere else.

The closest relatives to *Corydoras* are *Brochis* and the lesser known *Aspidoras*; these genera provide large and small cousins but are written about much less. The genus *Brochis* has two species, the often seen *Brochis splendens* (Castelnau, 1855) and the larger, long-snouted *Brochis multiradiatus* (Orces — Villagomez, 1960) — a truly beautiful callichthyid, seldom encountered by scientists and aquarists alike. In imports they are often accompanied by *Corydoras acutus* Cope 1872 (type for the long-snouted group). *Brochis* differ from *Corydoras* in size (they are larger by several inches) dorsal ray count (greater than the seven of *Corydoras*—between eleven and seventeen soft dorsal rays) and colour—dark green. A juvenile *Brochis splendens* would confuse most aquarists into mistaking it for a sailfin *Corydoras*; close examination shows eleven soft dorsal rays; many times aquarists brought them to me for identification.

I know nothing of the river systems *Brochis* inhabit but I have recognised the usefulness of an elongated snout in extracting food from the gravel substrate.

The genus *Aspidoras* was the subject of a paper published by Nijssen and Isbrücker in 1976 in which they redefined four known species (by transferring two *Corydoras*—*Corydoras raimundi* (Steindachner, 1907) and *Corydoras pauciradiatus* (Weitzman and Nijssen, 1970) and describing nine new species to this genus proposed by R. Von Ihering in 1907. In a later paper published in 1980 the ichthyologists added another species to bring the total known to fourteen.

These small callichthyids (none larger than 41mm standard length) are separated from *Corydoras* on the distinct character of a dual fontanel (opening in the head bone)—*Corydoras* have one elongate fontanel; so far all the species are from Brazil. Only two species are known to have been kept by aquarists, *Aspidoras pauciradiatus* was imported in 1977. I observed

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## Coldwater Jottings by Frank W. Orme

LAST month I devoted this column to the ever popular Water Lily, I now intend to continue the theme by describing a pond plant which is a particular favourite of mine.

With a similar mode of growth, the Water Hawthorn may not be as spectacular as the Water Lily; it does, however, make up for this by having a smallish flower which scents the air with an attractive fragrance very similar to that of the well-known Hawthorn of our country lanes—hence its common name. It is also capable of providing a longish flowering period; during mild weather it will flower intermittently from March to December, being one of the first to flower and the last to fade.

*Aponogeton distachyus*—to give the plant its correct title—belongs to the single-genus family Aponogetonaceae, which ranges from India and Sri Lanka through South-east Asia to Australia, Madagascar and South Africa. This family also contains such notable relatives as *Aponogeton crispus*, *A. siliaceus* and *A. fenestralis* all being aquarium show-pieces. There was a time, around a hundred years ago, when the Water Hawthorn was also considered a specimen plant for the aquarium—but, with the passage of time, it has been replaced by more suitable plants.

In 1788 the first Water Hawthorn plants were imported from the Cape of Good Hope, for cultivation at Kew Gardens, and soon settled down in our demanding climate. It thrived so well that, by the mid-nineteenth century, it had become established not only at Regent's Park Zoo Aquarium but, also, in the open ponds of the Edinburgh Royal Botanic Gardens. It has since proved itself capable of surviving the vagaries of the British climate in

the waters of the amateurs ornamental ponds, in depths varying from less than one foot up to about three feet.

This simple, but attractive plant, has a tuberous root stock—which can be around one inch thick—from which long slim stem rise bearing lanceolate-oval leaves. The glossy green leaves measure about five inches long with a width of 1½ inches, and are frequently tinged purplish-brown with some mottling, which fan out over the water surface. The pure white, sweet scented flowers with contrasting black centres have between 6-25 stamens, and are borne clear of the water on twin opposing spikes (hence the scientific name, *distachyus*, which has been given to the species), carried upon stoutish stems direct from the rootstock.

Although *A. distachyus* prefers sunlight, it will flourish equally well in the shade. Best results are obtained if planted in a heavy loam, similar to that used for cultivating Water Lilies, at a depth of around 15 in., in a sunny position. If a medium to large size plastic plant basket, as supplied by water garden centres, is used it will allow the plant to be removed when

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*Aponogeton distachyus*—Water Hawthorn





by  
Roy Pinks

I was pondering, recently, how attitudes towards fishkeeping have changed over half a century. In many respects things have been for the better, and improved techniques, first class equipment and a vast range of available species have all contributed towards getting the beginner off to a good start. I am much less happy about the attitude of the average starter to his new hobby—he seems oddly indiscriminating in his purchases and all too often bases his acquisitions on the recommendations of the on-the-spot salesman rather than a personally conceived and carefully worked out plan. This is all the more remarkable when one considers how many hundreds of books there are on the subject (many of them very inexpensive and highly informative), and how carefully the fishkeeping press aims to help both fish and their keepers to survive!

This would argue very strongly that beginners did as much homework before buying fish and equipment as they would do before buying a new car or a washing machine. All the marketing points need careful weighing before any commitment is made, not simply to ensure that the best value

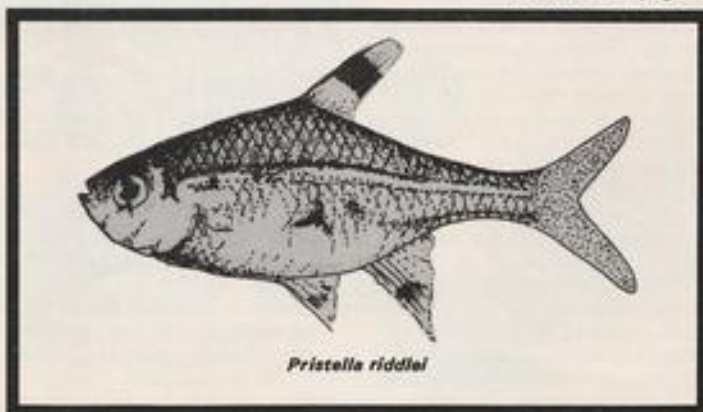
for money is achieved, but also to establish that you get what you want, and not what someone else thinks you want or wants you to want. In other words it does seem that buyers listen far more to the vendors in terms of a buying programme than they should do. Bear in mind that it is the vendor's job to sell, and to sell quickly—he must not be blamed for that: don't expect, when asking advice about buying new species, that he will have the slightest mental image of your particular tank and its contents which he sold to you a month or so previously. He sells lots of tanks and lots of fish—some buyers honestly think that the seller carries with him a permanent impression of their own aquaria and their idiosyncracies, such that they can be managed by remote control.

This is a sloppy attitude—don't keep fish if you don't understand what you are about! But what has this to do with 50 years ago? As I recall the position then, the whole undertaking was much more seriously contemplated and it was something of a luxury hobby. On the whole it was a pastime for those who were more involved in the biology and the botany than in providing a whimsical article of home decoration. Unfortunately there are always those folk who will buy a goldfish (usually with a bowl) because they think it is in some sense an essential domestic knick-knack rather than a living creature with a sensitivity

all of its own; such would-be vendors should be discouraged from keeping animals—tending the flights of plastic ducks above the mantelpiece is really more in their line.

However, all that time ago we tended to think more of our pennies before we parted with them and positively planned buying new fish for weeks and even months before they arrived in the shops. Of course, these were the really exciting times of the hobby, when new species were hitting the headlines every month and taking their time to become available to the trade. It was an altogether leisurely process, in which the tank and equipment were carefully and thoughtfully bought and assembled, and never a fish was introduced until the plants were seen to be multiplying. The schools helped a lot here by mounting an aquarium furnishing project at the outset of the academic years, only adding species when finance and progress of the scheme allowed. This highly responsible and constructive attitude helped many of us to undergo an apprenticeship in the hobby which is not normally obtainable today, when the accent is on the "instant" this or the "instant" that. What we did learn from all this is that nature cannot be hurried, and that there is genuine pleasure in taking time to build up a tank or a pool. If a rat-race worn individual turns to a hobby for relaxation and something to take his mind

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*Pristella riddlei*



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and photographed *Aspidoras poecilus* Nijssen and Isbrücker, 1976, whilst visiting a Brazilian aquarist during my stay. My photograph compares with the picture published in the Emmens & Axelrod book of catfish 1967. Captioned originally as *Corydoras cochui* Myers and Weitzman, 1954 which has now been recaptioned as *Aspidoras poecilus* in later reprints.

Whilst it could be said *Aspidoras* are not quickly distinguished by aquarists from *Corydoras* they do have a longer head and are much smaller than the average *Corydoras* imported. They seem prone to shipment damage succumbing quickly to adverse bacterial conditions, once established they appear to require the same aquarium condition as *Corydoras*.

I am sure from these notes it is obvious I could not write about these catfishes without the published research of the Dutch ichthyologists; they attract a great

many of the world's scientists and aquarists because of their work. I wish to take this opportunity to thank them for this information. The wealth of this detail means we are told of *Corydoras weitzmani* Nijssen, 1971, found 4000 metres high in the Andes and of the bristled head of a male *Aspidoras virgulatus* Nijssen and Isbrücker, 1980 from the Rio Doce, Brazil and, most of all, this work gives us an insight into the most popular and varied group of armoured catfish aquarists will ever keep.

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*Brochis splendens* — Juvenile. A delightful youngster commonly confused with juvenile *Corydoras*. The bronzed dorsal colour fades in the adult until the soft dorsal rays become clear

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# SIMPLE SYPHON SYSTEM

by A. Buckley

FISHKEEPERS often discuss how much water needs to be changed in a fish tank and how often water changes should be made.

Changing water in one or two tanks can be a minor task but aquarists whose enthusiasm has driven them to assemble a battery of breeding and rearing tanks frequently regard waterchanging as a necessary evil. It is a very laborious task to repeatedly start off a change of water by syphoning, filling buckets, and refilling tanks when many dozens of gallons of water need to be replaced.

I find that the system described here relieves the tedium of water-changing and gives me more time to enjoy observing, breeding and rearing my fish. I also feel that this system would be an aid to the handicapped as they would benefit from the ease of not having to carry water.

Each aquarium is permanently

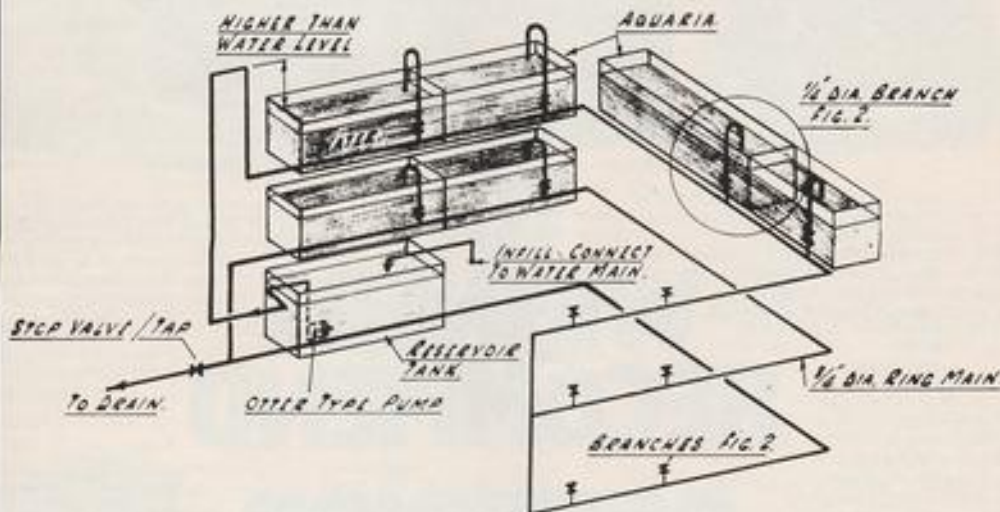
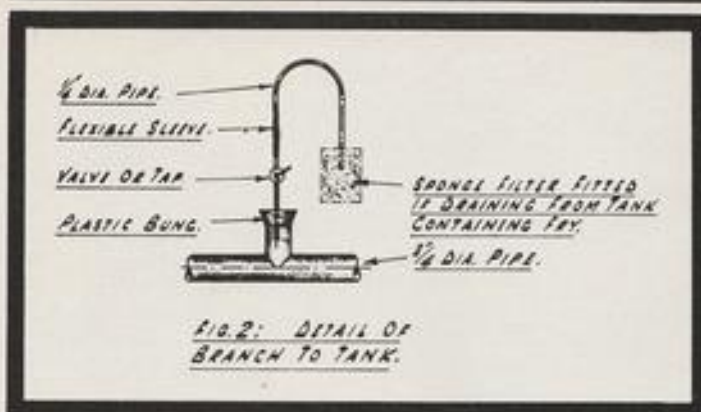


FIG. 1. FILL/DRAIN SYSTEM.



equipped with a syphon tube which incorporates a tap before joining a main drainpipe which carries the waste water away. All the syphons are joined into the main drainpipe by a "T" junction. One of these become the continuation of the main drain and can be shut off with the tap as shown in diagram "1" the other pipe from the "T" junction can carry fresh water to the tank from the reservoir tank via a pump. This allows the main drain and syphon pipes to feed the tanks and replenish the water continuously.

The first stage of water changing is to remove the water from the tanks and to achieve this the individual taps on the syphon pipes must be primed by means of opening the taps. Water is then pumped into the tanks momentarily to prime the syphons which will begin to syphon when the pump is switched off and the main drain tap is opened; this only needs to be done initially as the water remains in the syphon for future use.

As previously mentioned, the individual syphon pipes to the tanks each have a tap incorporated; this enables any tank having diseased fish to be temporarily isolated from the system. This is important because infected water draining away flows through the same pipe which will subsequently be used to carry fresh water to refill the tanks. You can therefore isolate any tank in your system for any length of time required.

The water source for priming and refilling need not necessarily be pumped

by an electric pump from a lower tank. It could probably drain effectively from a raised reservoir tank or, if you live in a soft water area it may, of course, come direct from the mains supply. I find that a 25% change with the replacement water at mains temperature does not harm my fish and after experimenting with various diameters of pipe I have found that the syphons as described here do not suck up tiny fry; see diagram No '2' with the filter attached.

A distinct advantage of the syphoning system described here is that the syphons can be quickly primed before being left to syphon without supervision. If the syphon pipes extend into the tanks to the appropriate water levels they will automatically cease to syphon at the desired levels.

Before the tanks are refilled the tap on the main drain must be partly closed and the individual taps to the tanks must remain open. After these preparations the fresh water supply is switched on. Refilling the tanks definitely requires close supervision in its final stages. As the water level in any tank reaches the required level the tap for that tank must be turned off to prevent that tank from overflowing whilst the other tanks continue to receive water. The reason I always leave the main drain tap partly open whenever the pump is operating is that this prevents possible damage being caused to the pump by the increasing resistance as taps supplying the tanks are turned off.

Setting up this system should be

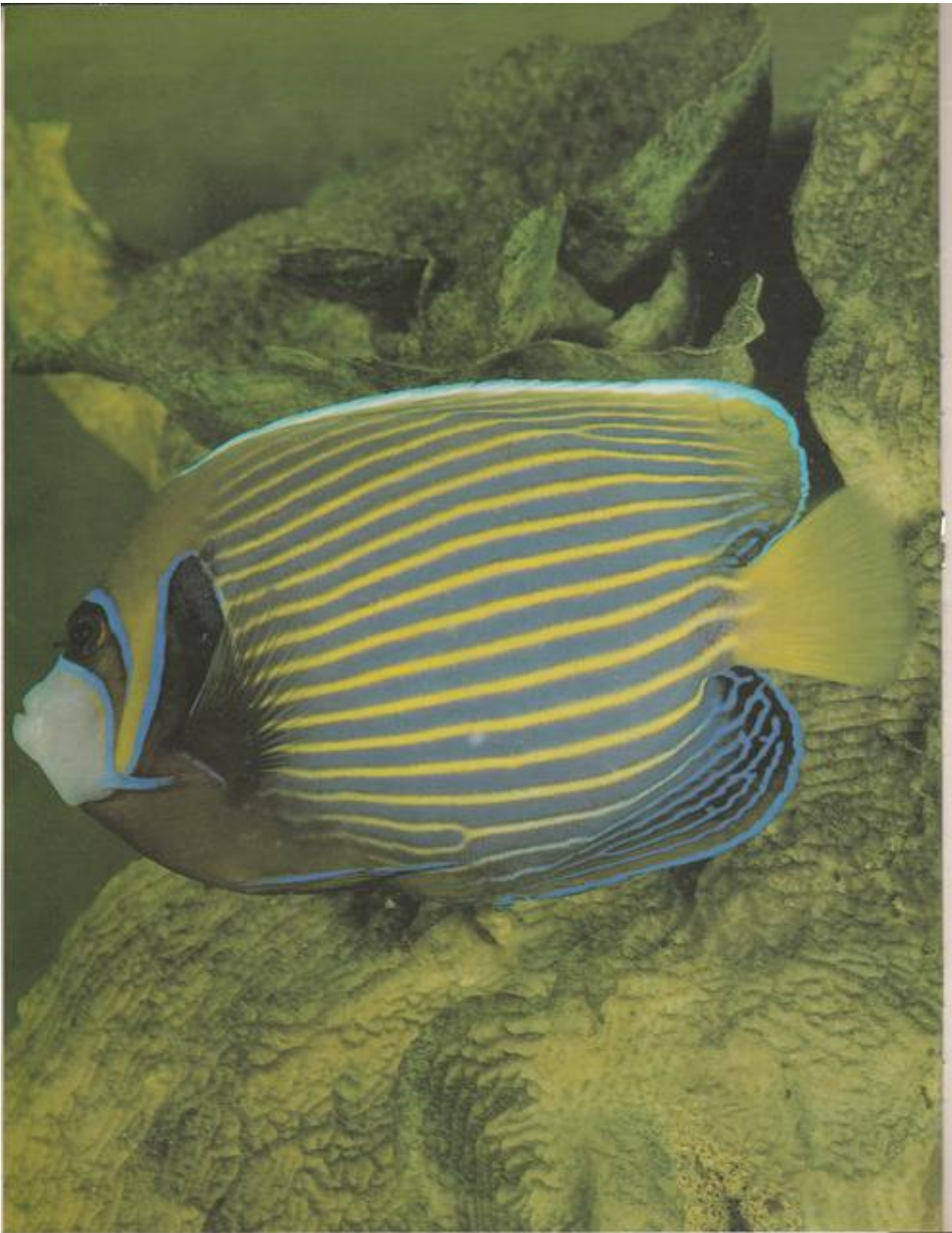
straightforward and the various parts can be purchased with a minimum of trouble and enquiry. The main drain pipe is available from a plumber's merchants and is  $\frac{1}{2}$  inch rigid plastic "overflow pipe" with "T" pieces and "elbows". Home brewing shops can supply plastic taps and the rubber bungs with central holes into which the taps fit. I had to choose the type of plastic taps carefully to ensure that they did not leak under pressure. Flexible rubber tubing from a motorist's store was used to join the taps to the individual syphon pipes. Flexible tubing was preferred to rigid because the soft pipe tolerated the slight difference in diameter between the pipes and the taps. The flexibility also allows the syphon pipes to be moved or disconnected. The syphon pipes were made from  $\frac{1}{4}$  inch semi-rigid tubing which you can purchase from most D.I.Y. stores. I cut it to the required lengths, softened them in hot water, bent them to the required shape; they retained their bent shape after cooling in cold water. If you look at the diagram you will note how each piece slots into the next etc. etc. from the pump through the system to the drain.

In a large fish house this system may be expensive to set up initially but careful planning of pipe routes would minimise the expense on pipes. The more tanks there are on the system the more hours of labour are saved and I believe this would make the financial investment well worthwhile; I've certainly found it so.

Tanks would still have to be individually syphoned to remove accumulated muck but this could be a simple task because it would no longer be necessary to remove many additional gallons of water in the same slow operation.

I've found that plants grow much better under this system as I'm no longer disturbing them and fish also enjoy the improved conditions. What was once a laborious task, by the turn of a tap and the flick of a switch has become effortless.

I enjoy my fish more and my new found freedom and hope anyone who introduces this system to their fish will derive the same extra pleasure from their hobby.



# SPOTLIGHT

## Emperor Angelfish

by  
Martyn Haywood

Specific name: *Pomacanthus  
imperator*  
Size: 15 inches

One glance at the photograph opposite amply explains why this fish is called the Emperor Angel. There can be few more regal or imposing fish available to the hobbyist. Freshwater aquarists often dub the Discus as the King of Fishes but there can be few marine fishkeepers who would agree with them—demand for the Emperor Angel consistently outstripping the supply.

Fortunately for the marine hobby this is one of the most wide-ranging of the popular species. *P. imperator* is found wherever there are coral reefs in the Red Sea, Indian Ocean and the western half of the Pacific Ocean. They are not one of the more common fish on the reefs—being found in territory-holding pairs or as isolated, wandering juveniles. In the northern part of the Red Sea there is a pair every 50 to 100 yards and they can be found at depths of from 10 feet to over 100 feet. Thus although they are by no means rare fish they are spread fairly thinly and meeting the world-wide demand poses severe problems for the collectors, particularly as they are reputed to be one of the more difficult species to capture.

Like all the angelfish and butterflyfish of the family chaetodontidae, the Emperor Angel is notably laterally compressed—so much so

that a specimen 12 inches long and 8 inches deep may be barely more than an inch thick in the body. The advantage of this shape to a territorial fish is that it allows it to present a large area to an intruding and competing member of the same species. Equally, and more perplexing for the native collectors—who are usually skin, rather than scuba, divers they can quickly dodge in among dense coral thickets or, particularly when large, hide in the many holes and cracks found in the underwater caves which often form the focus of the adults' territory. They are also quite happy to swim on their sides, rather like a gaudy flounder, to find a hiding place. This rather unusual behaviour frequently frightens their new owners.

These problems of comparative scarcity and difficulty in catching conspire to make the Emperor Angel one of the most expensive marines—adults currently commanding £50 or more by the time they reach the retailers' tanks. Despite this they are justifiably popular for they pose no serious problems of maintenance to the experienced or careful hobbyist. Like all the chaetodontidae they demand good water conditions; no nitrites or ammonia; a pH between 8.1 and 8.4; a low level of nitrates and a temperature in the high 70s Fahrenheit. Unless it is one of those very

infrequent specimens shipped from the Red Sea, then a specific gravity of 1.020 to 1.022 is suitable.

Emperor Angels are rarely happy in aquaria with limited decor as they seem to need plenty of hiding places if they are to feel comfortable. It may seem strange but the more they are able to hide the less they will actually do so. They appear to be more confident if they know there is always a bolt-hole within a few inches. Conversely, if the tank has only one obvious hiding place, the fish will spend much of its time there as that is the only place it feels secure.

Emperor Angels also seem to mope and decline if they do not have enough swimming space. As a general rule it is wise to allow ten gallons of water for each inch of fish—thus a two inch fish is happy in a 20 gallon tank while a ten inch specimen requires 100 gallons.

This is not to say that other fish cannot occupy some of the space—just that Emperors like some elbow room. Indeed, as a general rule *P. imperator* makes a very good show fish when kept among a group of small fishes. On occasion some large specimens are aggressive, most particularly those which are imported as adults, but more usually the aquarist will be concerned to find equally peaceful tank-mates.

If the thought of spending £50

## SPOTLIGHT



or more on a fish is a little off-putting to the average hobbyist then possibly the fact they are very easy to feed will go some way to offset this nervousness. It is very rare to find a specimen which is even remotely reluctant to feed. Among newly imported fish they are always one of the first to resume feeding and when settled into a suitably sized and maintained aquarium they often prove to be gluttons. They will take most suitably sized foods, including flake and dried foods, but although they generally prefer the chunkier frozen foods such as shrimps and shellfish they also require a good supply of vegetable matter. This can either be growing green algae or a prepared vegetable food. A few fish develop very individual and surprising tastes, one Emperor I

know of liking nothing better than processed cheese.

Perhaps more surprising, particularly to newcomers to the marine hobby, is that this fish, along with other *Pomacanthus* species, shows totally different colours when juvenile compared with the adult fish. Most *Pomacanthus* display a vivid pattern of thin white bands or stripes on a deep blue background when young. In the case of Emperor Angels the young have a pattern of strongly curving white crescents and one stripe which usually forms a complete circle at the caudal peduncle. At this stage the fish might be confused with the much commoner Koran Angel, *Pomacanthus semicirculatus*, but here, as the specific name suggests, the white banding is semicircular and the ring is absent. Juvenile Bluewinged Angels, *P. annularis*, also show white markings but these are almost vertical and the tail is milky white.

As the young Emperor approaches sexual maturity, usually at four to five inches long, its colours begin to change. First there is merely a hint of yellow in the dorsal fin but

then the body is overlaid with diagonal buff stripes. As the juvenile white stripes fade the diagonal markings become more intense, the tail becomes yellowish-orange and the distinctive bandit's-mask develops over the eyes. Throughout this 'adolescent' stage Emperors are very fussy about their water conditions and the extra effort of a 10 per cent water change each week is well rewarded.

When fully grown some specimens develop filamentous extensions to the dorsal fin. Whether this is a sexual characteristic is not known but owing to the fishes size and the involved larval feeding problems, the question of breeding does not really arise. However, two closely related Atlantic species, the French and Black Angels are being bred and reared and indeed a hybrid called the Arc Angel has been produced.

Perhaps one day the Emperor will be reared commercially and in large enough quantities to enable all marine hobbyists to enjoy this wonderful fish.



### DEVIL FISH?

The photograph is the March issue of *Aquarist and Pondkeeper*, page 34, is a 'Jenny Haniver.' It is constructed from a Skate, usually a male; the fins in some cases are removed and in others curled and tied back and then dried in the sun. The nostrils form the 'eyes' and the male claspers form the 'legs.' After drying the whole fish is then varnished. It appears they were quite commonly sold by seamen

returning to England from the East and were sold as curiosities or 'Sea-Devils' to the Victorian public.

In his book, *Animal fakes and frauds*, Peter Dance devotes a chapter to the 'Jenny Haniver' and also has a photograph of a wood-cut from Conrad Gessner's 'Historia Animalium,' which was published in 1558, so they go back quite a few years. No one seems certain how the name 'Jenny Haniver' evolved; I have never been able to find the answer myself.

Presently they are being sold in tropical shell shops in most seaside resorts and are made in the far East.

J. S. Barker, Dorking.

I cannot positively identify the 'Devil Fish' you published a photograph of in the March issue of *Aquarist and Pondkeeper*. However, I have seen something like this before. It was an illustration in an account of the

manufacture of 'Jenny Hannivers'. These 'Jenny Hannivers' were artificial creatures manufactured with great skill in the city of Antwerp for many years—'Hanniver' being a corruption of the name of that city in French. These fakes were the stock-in-trade of circus peep-shows throughout Europe. Usually they consisted of parts of different creatures artfully stitched together. A favourite subject was the Mermaid or Merman and it was in this connection that your curious looking fish appears. I am not sure whether the photograph shows a completed Jenny Hanniver or whether it is that this fish was commonly used for Merman fakes. Either way, it must be the first time that *Aquarist and Pondkeeper* has featured "a merman." I wonder what sized tank you need for a merman and what you would feed him on?

Russ Vallance, East Finchley.



## of the Aquarium

### Characins

The term Characin has been used by many people in many ways over the years. To some, a Characin is a fish belonging to the Family Characidae while, to others, the term could be used when referring to any one of 20 separate Families within the Suborder Characoidei. The trend among ichthyologists today, however, is towards the 1966 classification of Humphry Greenwood from the British Museum (Natural History) and his co-workers who divided the Suborder Characoidei (the Characoidei) into 16 Families, one of which, the Characidae, includes the aquarium fish we commonly refer to as Characins.

Even in this limited sense, the Characidae form a large and diverse Family which includes the peaceful and colourful Neon (formerly known

as *Hyphessobrycon innesi* and now variously known as *Paracheirodon* or *Cheirodon innesi*) and the fierce and famous (or infamous?) Piranhas (*Serrasalminus* spp.).

One of the most interesting Characins must undoubtedly be the Blind Cave Fish, *Astyanax mexicanus* (formerly known as *Anoptichthys jordani* and still regarded as such by some aquarists). As the name suggests, this Characin is blind. Its eyes are present at birth but they are soon completely covered up by scales which protect the delicate tissues from being damaged. This unusual characteristic has evolved as a result of natural selection in the Mexican caves where these fish are found and where functional eyes are of no use at all. Interestingly enough, a coloured and sighted version of the Cave Fish is found in the rivers surrounding the caves. Fertile "hybrids" are produced between both

forms in aquaria and, in at least one shallow cave, both types, plus a range of intermediate forms, co-exist.

Most of the Characins kept in aquaria are colourful, active, but peaceful fish, such as the Tetras. Although most are also small, some, such as *Brycon* which can grow to 90 cm. (nearly 3 ft.), and the Piranhas are certainly not. All species are provided with well-formed teeth and most have a second, very small, dorsal fin called an adipose fin. Characins are restricted to freshwater and are distributed throughout most of Central and South America and large areas of Africa.



*Astyanax mexicanus*

### Damselfishes

DAMSELFISHES belong to the Family Pomacentridae (Order Perciformes). They are small, colourful fishes (rarely exceeding 15 cm (6 in.) in length), usually found in coral reefs or their periphery. Although most species are Indo-Pacific, some are found elsewhere. *Chromis chromis*, the Brown Forktail, for example, is among the most common fishes of the Mediterranean, and the Sergeant Major (*Acanthurus saxatilis*) is common in the tropical reefs of the Atlantic, Red Sea, Pacific and Indo-Pacific.

Damselfish classification is extremely difficult because of the existence of many species complexes (groups of apparently closely related species) and differing colour patterns among individuals of a single population, between immature and adult stages, and between populations from different localities. There are currently about 23 genera with around 230 species.



Clownfish (*Amphiprion*)

Most of these exhibit the unusual feature of having a single nostril on each side of the head, a characteristic they share with the Cichlidae. However, Damselfishes also possess a subocular shelf, a bony plate under the eye socket, while Cichlids do not. Also typical of Damselfishes is the possession of two spines in the anal fin (one rare genus, *Zabulon*, has three).

In the aquarium, the most common species of Pomacentridae include the Anemone or Clownfishes of the genera *Amphiprion* and *Premna*, the Domino (*Dascyllus trimaculatus*), the Humbug

(*D. aruanus*) and the Blue Damsel (*Chromis cyanus*) sometimes known as the Green Forktail Damselfish.

The Anemonefishes are well known and deservedly popular because of their close association with anemones against whose sting they are apparently immune. Equally interesting is the way in which the sex of an individual is determined, at least in the genus *Amphiprion*. These fish are protandrous hermaphrodites. This phenomenon is best explained by an example: In the wild, small groups of *Amphiprion* of differing sizes are often found associated with a single anemone. The largest fish is invariably a female, the next one down a male, and the remainder, immature. If the female dies or is removed, the male becomes female and the largest of the immature individuals becomes a functional male. Sex is, therefore, quite a flexible characteristic in these fish.

Several species of Damselfish have now been bred in aquaria. These include some of the *Amphiprion* species, the Domino, and the Humbug.



## Cichlids

THE Cichlidae constitute the second largest Family in the Order Perciformes, the largest being the Gobiidae (Gobies) with an estimated 800 species. There are about 700 Cichlid species grouped into approximately 85 genera, many of which have found their way into the hobby at one stage or another.



*Aequidens latifrons* with fry

Cichlids are widely distributed, mainly in freshwater, (although there are some brackish species, e.g. the Chromides, *Etropus* spp) in Central and South America, the West Indies, Africa, Madagascar, Syria, the coastal areas of the southern half of the Indian subcontinent and Sri Lanka. The northernmost species is the Texas Cichlid, *Herichthys cyanoguttatum*.

Being so numerous and widely distributed, Cichlids exhibit a wide range of body shape, colour, behaviour and size. The largest species is *Boulengerochromis microlepis* found in Lake Tanganyika. At a maximum length of 90 cm. (nearly 3 ft.) it is, not surprisingly, hardly ever seen in aquaria. At the other extreme, some of the Dwarf Cichlids belonging to the genus *Apistogramma* grow no bigger than 3.5 cm. (approx. 1½ in.).

Yet, despite their large size differences, all Cichlids possess at least one characteristic in common—they only have one nostril on each side of the head rather than the usual two (see Damselfishes for further

discussion of this point). In addition, Cichlids usually have a "split" lateral line, the front (longer) section being located higher up the body. Most species have brown-tipped teeth. The dorsal (back) fin is divided into a spiny, unbranched (hard) anterior section and an unbranched (soft) posterior one supported by rays. On the whole, Cichlids will eat a wide range of foods and are, therefore, not difficult to keep.

Spawning behaviour is varied, although parental care is characteristic. "Typical" spawning strategies among Cichlids include substrate spawning (i.e.) deposition of eggs on rocks, leaves, etc. (as in Angelfish, *Pterophyllus scalare*, *Acaras*, *Aequidens* spp) and Oscars, *Astronotus ocellatus*) and mouthbrooding (as in many African species such as the Golden Lake Malawi Cichlid, *Melanochromis auratus* and the South African Mouthbrooder, *Pseudocrenilabrus philander*). Discus, *Symphysodon* species, go a stage further by producing a body secretion which the fry feed on during the first few weeks of life.

## Danios

DANIOS, along with the Barbs, Carps and Minnows, belong to the Family Cyprinidae (Order Cypriniformes). At around 1,600 species strong, Cyprinids constitute the largest Family of fishes, followed by the Gobiidae (Order Perciformes) at 800 strong.

Fishes known as Danios belong to just two genera, *Brachydanio* and *Danio*. One of the species, *B. rerio* (the Zebra Fish/Danio) is among the most popular of all aquarium fishes. All Danios are highly active, slim-bodied, peaceful, colourful, shoaling fishes distributed in various parts of India, Burma, Thailand, Sumatra and Sri Lanka.

*Brachydanio* species are smaller (at a maximum of 6 cm—2½ in.) than *Danio* species which can, reportedly, attain a length of 15 cm (approx. 6 in.). They may also be distinguished in that *Brachydanio* has a short-based dorsal fin with a maximum of 8 rays while *Danio* species have as many as 17. The corresponding maximum figures for the

anal fin paint a similar picture (i.e.) 13 and 17 respectively. Finally, the lateral line runs the whole length of the body in *Danio* but is interrupted in *Brachydanio*.

The species of *Brachydanio* found in aquaria are *B. albolineatus* (Pearl Danio), *B. frankei* (Leopard Danio), *B. harri* (Kerr's Danio—only found rarely), *B. nigrofasciatus* (Spotted Danio) and *B. rerio* (Zebra Danio). There are several varieties of the Pearl Danio, the main ones being the "wild-type" (i.e.) as found in nature, and a golden one referred to as the Gold Danio. The Leopard Danio is the least understood in that some maintain it to originate in Thailand or (probably) India while



Adult pair of *B. rerio*



Spawning pair of *B. rerio*

others believe it to be a mutant form of the Zebra Danio produced in Czechoslovakia. The Zebra is found in two forms, the short-finned "wild-type" and a long-finned variety developed artificially. Both are very active and beautiful but the long-finned variety is less robust and requires back crossing with the wild-type every few generations in order to maintain vigour.

There are two species of *Danio*, *D. desario* (Bengal Danio) and *D. malabaricus* (Giant Danio—sometimes known as *D. aequipinnatus*).

All Danios thrive on clean, softish water at around 24°C (mid 70°F), will take a wide range of foods and are avid egg eaters.

Continued from page 34

will cluster around senioritas to solicit attention. When a seniorita swims alongside and inspects a blacksmith, the latter stops immediately and drifts, holding its fins erect, even presenting a particular part of its body to the seniorita to pick from. This action quickly attracts several other blacksmiths to the spot. Soon the seniorita shows no further interest and they disperse, save a few repeatedly presenting themselves and being ignored. Once they lose contact, they don't "present" to other senioritas in the vicinity. In this case the cleaner seems to be recognised by her action, rather than appearance. By cleaning a predator, the cleaner fish itself escapes predation.

Cleaner fish themselves acquire parasitic copepods when cleaning their prey-fish, as theirs are the only species

found on them. Some fish being cleaned change colour from stress. Cleaning seems to be a purely diurnal habit, reduced markedly when the water becomes turbid, or colder, or in strong currents. It increases with warmer water.

How would you assist egg-expulsion in an egg-bound snake? Removal of the amniotic fluid was found to do this in a Philadelphia collection. Did it need two biologists to conduct costly, time-consuming research at Towson University, U.S.A., to prove what amateur observers already knew, that migrating spotted salamanders don't orientate to frog-calls? That tiger-salamanders use skin-secretions for defence was also obvious before it was researched; but Nova Scotia museum got more useful information, that blue-spotted salamanders distribute tiny pea-clams.

South America is still the most productive ground for new species. A remarkable new salamander, *Bolitoglossa digitigrada*, has been discovered in southern Peru and a new gecko, *Sphaerodactylus celicara*, from eastern Cuba. A new species of cave-frog, *Platymantis spelaeus*, has been discovered in the Philippines, a new tree-frog, *Ptychocheilus panchoi* in Guatemala's Sierra de las Minas; 2 more, named *Hyla babax* and *H. vanzolinii* from Brazil's Caparaó in Minas Gerais. Two new species of poison-dart frogs, *Colostethus edwardii* and *C. ruizi* come from Colombia.

A new Cuban iguana is named *Chamaeleolis barbatus*: a new slowworm, *Abronia mitchelli* and a new lizard *Lepidophyma tarracon* have been discovered in Mexico and a *Stenocercus* iguana, *bolivarensis*, in the Columbian Andes.

## Lion Fishes

Continued from page 31

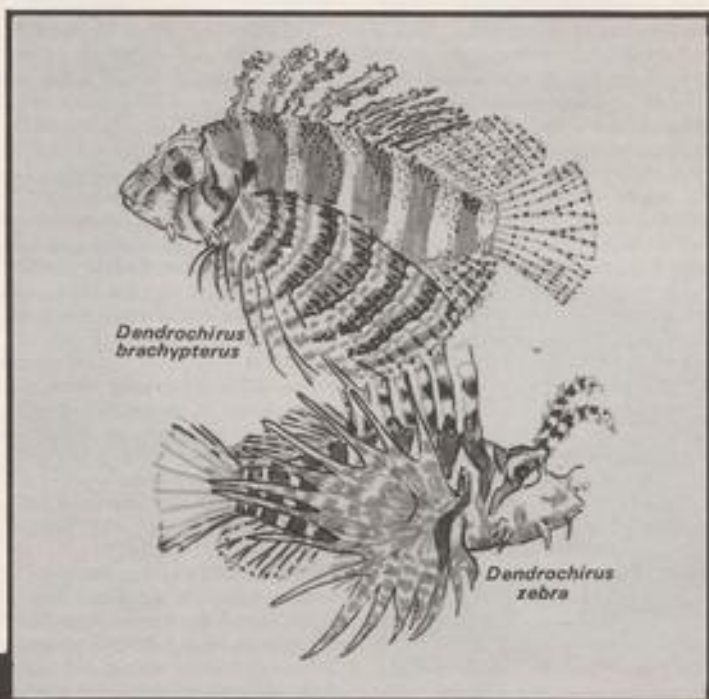
### *Dendrochirus zebra*

Also popularly called the Zebra Lion fish because of its scientific name (it's no more zebra-like than the other species), this fish is more like the larger Lion fishes and enjoys their popularity.

Feeding is not, as a rule, difficult, but again live foods are preferred.

When small it is easily confused with *Pterois antennata* and *P. sphex*, but its smaller size (although it can reach 8 in. (200mm) in the wild), makes it desirable in fuller communities.

Both species are usually less expensive than those of *Pterois*.



# Your questions answered...

Having problems? Send your queries to our panel of experts who will be pleased to be of service. Every query receives a personal answer and, in addition, we will publish a selection of the most interesting questions and responses each month. Please indicate clearly on the top left hand corner of your envelope which department you wish your query to go to. All letters must be accompanied by a S.A.E. and addressed to:  
**Your Questions Answered, The Aquarist & Pondkeeper,  
The Butts, Brentford, Middlesex TW8 8BN.**

## TROPICAL



Dr. C. Andrews

## Tropical



### piranha . . .

Can you give me some information on piranha in the aquarium?

Piranhas can be kept in the home aquarium, although they are not as robust and hardy as their reputation might suggest. They must be given the respect they deserve, as even quite small individuals can give a nasty bite—so handle with care:

They are not a community tank fish! Piranha are best kept as a single fish in a 15-20 gallon tank, or as a small shoal of five or six individuals in a much larger aquarium. The water temperature should be a constant 25-28°C (or around 78°F). When small they will feed on all manner of live food and scraped lean raw beef. As they grow older they can become accustomed to a diet of lean raw beef and occasionally, fresh or frozen raw fish. Dead goldfish, guppies, etc. may add variety to the diet, but beware of introducing disease in this manner.

The aquarium is best set-up along fairly spartan lines: a good external power filter, a minimum of strong living or plastic plants, and a layer of gravel (if desired). Rock caves may be provided—but beware of nervous piranha injuring themselves on sharp edges. Heater-thermostats have also been broken in this way. Piranha have been bred in the aquarium—but spacious quarters along with a good, varied diet seem important to bring the fish into spawning condition.

Piranhas tend to be rather messy feeders. All excess food should be removed once it has settled onto the tank floor. Every week about 25% of the water and all the accumulated debris should be siphoned out, and the tank topped up with fresh water at the correct temperature.



The Black Piranha

### chocolates & cats . . .

Can you give me some information about the chocolate gourami and the whiptail and banjo catfish?

The chocolate gourami (*Sphaerichthys*) is quite a challenging fish to try and keep. It seems to prefer soft, slightly acid water at a temperature around 28°C. Fluctuating water conditions must be avoided at all costs. Initially it will have to be offered live food, although it may eventually take 'life-like' dry foods such as FD Bloodworms. It likes the quiet life—with regular partial water changes and stable water quality.

The whiptail cat (*Rhinoloricaria*) is rather easier to keep. Extremes of water quality should be avoided and a temperature of around 25°C provided. It should feed on flaked and tablet foods, especially Conditioning Food.

The banjo cat (*Bunocephalus*) is a nocturnal fish which requires a large tank with plenty of hiding places. The composition of the water is not critical and a temperature of 25°C will suffice. It should take flaked and tablet foods although you may need to coax it on some live foods first.

### hole-in-the-head . . .

I believe that my Oscar has 'hole-in-the-head disease'—Can you recommend a treatment?

There are several alternative methods for treating fish to control *Hexamita*, the causative agent of this disease. On a large scale such as fish farms, where it may cause problems in small trout, furazolidone (e.g. Smith, Kline and French) may be added to the food, although this is rarely possible under normal aquarium conditions. Administration of any drug with the food to treat *Hexamita* is complicated by the fact that markedly affected individuals often lose their appetites. Fortunately, two drugs may be added to the water of the stock tank to treat this disease.

Emtryl (dimetridazole, May and Baker) may be used at a final concentration of 5mg/l (50mg/10 litres, 140mg/cubic foot) in the water of the tank containing the infected fish. This dose should be given three times at weekly intervals. Although this drug is said to inhibit spawning of some fish for a few weeks, diseased fish are unlikely to spawn anyway. It has been suggested that markedly diseased fish should be given a 48

**COLDWATER**

Arthur Boarder

**PLANTS**

Vivian De Thabrew

**KOI**

Hilda Allen

**MARINE**

Richard Sankey

**DISCUS**

Eberhard Schulze



Discus suffering from hole-in-the-head

hour bath in a solution of 40mg/l of Emtryl in a separate isolation tank. This method of treatment remains to be tested on a large scale.

An alternative, Flagyl (Metronidazole, May and Baker) may be used, although this method of treatment is said to inhibit (rather than eliminate) the infection.

Sufficient Flagyl should be added to the aquarium to give a final concentration of 7mg/l (71mg/10 litres, 200mg/cubic foot). One treatment is usually sufficient, although it may be repeated every other day for a maximum three applications. Flagyl can also be incorporated into the food (at 1% by weight), and fed for several days. This offers an excellent means of controlling *Hexamita*, although the problems of food medication on a small scale, and the loss of appetite of diseased fish, have been mentioned. Nonetheless, in the United States a medicated flaked food for ornamental fish is marketed, which contains metronidazole, and which has been very effective in eliminating *Hexamita* from fish which are still feeding. Unfortunately, this food is not available in the British Isles.

Furazolidone, dimetridazole (Emtryl) and Metronidazole (Flagyl) are only available on a veterinary prescription in the British Isles, and your local vet (see "Yellow Pages") should be able to advise on the calculation of the correct dose levels. (When adding drugs to aquarium water it is important to dissolve the chemical in a little water from the tank, and then evenly disperse this throughout the bulk of the remaining water).

Although both of the aforementioned drugs have been used successfully and safely on many occasions, it is important to realise that neither is licenced specifically for use with fish, and hence any aquarists using them do so at their own risks.

The introduction of *Hexamita* into stock tanks may be prevented by the quarantine of all new fish, and the administration of a preventative course of treatment to fish such as discus, angel fish and oscars. Other species of fish may also carry the infection, and act as a source of the disease for more susceptible species.

C.A.

**Coldwater****hydra . . .**

I have spawned a pair of fantails several times but always lose the fry after three or four days. I use spring water and feed with *infusoria* I have made with lettuce leaves in water. I notice some tiny jelly like

things on the inside of the glass which retract when touched. Are they Hydra and if so where do they come from?

From your description it is certain that the creatures on the glass of your tank are Hydra. These can kill fry and may have been introduced with spring water or water plants. Do not use spring water but tap water as long as it does not come through fairly new copper pipes. To be on the safe side, use a sterile tank for hatching and use no water plants. As a spawning medium use some plastic wool from a cleaning mop. Do not use *infusoria* you have cultivated but *Liquifry*, as impure water can be introduced to a tank with cultivated *infusoria*. You do not need a large tank for hatching purposes as the fry need not have too large a tank for the first few weeks. As they grow they may be spread out as they are sorted.



Hydra can kill fry



Crested newts are protected by law

### obtaining newts . . .

Where can I get some newts as I wish to stock my tank with them?

Newts may sometimes be obtained at a pet shop in the early spring and those firms advertising reptiles, etc., may be able to oblige. The usual method is to catch them from a natural pond in the spring when they come to breed. They are easily caught as they have to come to the surface to breathe at fairly frequent intervals. It is then quite easy to catch them. You state that you wish to keep them in a tank but you must realise that they only go into the water to breed and once this is over they must leave the water and live on land until the following spring. Therefore when breeding is over you would have to keep them in a vivarium.

### varieties of goldfish . . .

I have noticed a number of varieties of goldfish advertised which I had not heard of. Are they recognised by the Federation of British Aquarist Society?

The kinds recognised are: The goldfish; Comet; Fantail; Veiltail; Veiltail Moor; Fantail Moor; Oranda; Lionhead; Shubunkin (London and Bristol); Celestial; Bubble-eye and Pearlscale.

However, the Japanese recognise many other varieties and it appears that

any fish which turns up in a spawning which has something different about it is given a name. If I had named every variation among fishes from one spawning of fantails, I could have introduced at least a dozen new varieties, which were in fact to me, only mis-shapen fishes and were discarded. Some of the new names are given to the same shape of fish with a differing colour or shape of a caudal fin. In an exhibition such fishes would have to be judged as members of the recognised type to which they mostly resemble.

A.B.

### Plants



### anchoring plants . . .

I have been using Elodea and Cabomba weed, which I have to weight down in my fish tanks. I find that after a few days this weed is always floating on the top of the water. Could you please advise me of a decent bushy weed which can grow without this happening?

Your problem is quite a common one faced by many aquarists. First of all, please ensure that you have a sufficient depth of planting medium. This should be at least three inches. Elodea and Cabomba, and for that matter all aquatic plants, need to be



*Aponogeton echinatus*

anchored well in the tank bottom. If your tank bottom consists mainly of aquarium gravel, then this will not anchor the plants securely. The ideal base would be a mixture of sand and clay, or sand and peat. If aquarium peat is used, then a fine layer of peat should be covered by about 2½ inches of coarse sand. This will form quite a compact base for the plants to anchor in. The plants will anchor well and also root very quickly.

A few other species which should produce a bushy effect are: *Synsetia triflorum*, *Ludwigia natans*, *Hygrophila polysperma*, *Hygrophila angustifolia*, *Lobelia cardinalis*, *Rotala indica*. On the other hand, you could also plant several Aponogeton bulbs which will produce excellent results. Once buried in the planting medium, they do not dislodge and float on the water surface easily. They are extremely hardy, vigorous and very attractive.

V.T.

### Koi



### pond capacity . . .

I have recently moved to a house which has a round ornamental stone pond built many years ago. It is 12 feet across with vertical sides and is 3 feet deep and I would very much like to know how much water there is likely to be in this pond?

From your general description of the garden and the few relevant details I have quoted it seems obvious that you and I belong to the age when everything English was meaningful and simple calculations could be remembered, even though perhaps used with fractions rather than decimals. Today there is a confusion of English and metric systems which would be diabolical if it was not for the saving grace of the ubiquitous cheap pocket calculators.

The formula for the volume of simple shapes such as your pond is based on the surface area, times the depth multiplied by the number of

gallons in one cubic foot. For your round pond, the surface area in square feet is obtained from  $\pi r^2$  where  $\pi$  (Pi) is 3.14, the radius (half diameter) is 6 feet, and  $3.14 \times 6 \times 6$  equals 113 sq. ft. Multiplying by the depth of 3 ft. gives 339 cubic ft. There are 6.23 gallons in 1 cubic foot and therefore the volume of water is 2,112 gallons. Note that the figures have been rounded for ease of explanation and to all intents and purposes your pond could be assumed to hold 2,000 gallons if and when the need for adding treatments should arise.

H.A.

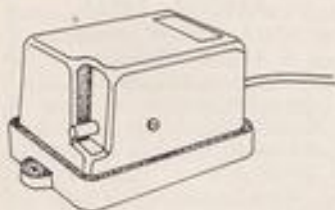
## Marine



### type of pump . . .

Within the next two months, I am building a unit to take 6 ft. x 3 ft. tanks, of which four are for tropical fish, and two for marine fish. The problem is in deciding which would be the best pump to use for the supply of air to all the six tanks. I don't fancy having different pumps for different tanks. Could you please suggest what type of pump I could use?

My idea is to run one pump to a 'ring main' from which I could then run separate air lines to the different tanks. I hope that you can answer my query in the next issue.



Further to your letter to the Marine Queries Problem page of the *Aquarist & Pondkeeper* magazine. Supplying air to a number of aquariums has been a problem for many years and frankly there is no simple answer. By far the least expensive method would be to use a number of individual vibrator type air pumps. A good aquarium

shop could advise you on this matter. Most of the air pumps that are designed for running fish houses or a number of aquariums, are usually designed to run a far greater number of aquariums than you have. Besides they are usually quite noisy and unless you are prepared to locate your air pumps some distance away from your house, you will probably be most unimpressed by the noise. Furthermore, although a 'ring main' air supply is technically the best and indeed exactly the type of installation we use, I feel it would not be the best choice for you because if you were to have a pump failure at any time, it would put you in a very difficult situation. Whereas with a number of small air pumps this would not be the case. May I suggest you discuss the matter with a local aquarium shop where you personally feel confident about their abilities.

R.S.

## Discus



### 'mixed' tanks . . .

I have a 54 in. x 15 in. x 12 in. tank with a power filter and it contains: 2 young Plecostomus, 1 Bronze Catfish, 2 Dwarf Gouramies, 10 Black Neons, 10 Cherry Barbs, 3 young Clown Loaches and 2 Botia Modesa.

If I brought the pH down to 6-6.5 and the GH down to 0 or something near that would the introduction of a number of young Discus fish be OK? I have read a lot about the fish and understand their needs. All the above fish are living together at the moment peacefully and have been for a month or so.

Also, would my two 'Zebra Veltail' Angels be alright with the Discus fish, they tend to be peaceful towards all other fish I have kept them with.

I feel that if you want to seriously keep Discus fish you must certainly consider whether you want to hold on to all the fish you have mentioned.



Discus are best kept in a species tank

Although Discus fish are often kept in a 'mixed' aquarium, from experience I know that such a set-up never really is very successful. Discus fish can be and very often are a very shy fish and will not do very well if kept with active fish like Barbs, the Gouramies might not take the temperature and the Plecostomus will grow too large and will become very active at night when the Discus fish will settle down. It was once very fashionable to keep Discus with Plecos but one soon learned that it spelled disaster. Often one would find large 'suction' marks on the sides of the Discus fish (it also often happens to large Angel fish) and they often just gave in and soon would die.

Discus fish and Clown Loaches make a good combination, they like the same temperature, the same hardness of the water and will eat the same kind of food. If you like not just a plain Discus fish tank but like also a shoal of small fish, I suggest you have a great number of Cardinal Tetras. One of the nicest tanks I have ever seen contained 12 large Heckel Discus fish with a few thousand Cardinal Tetras.

The pH of your water at 6-6.5 is perfect for Discus fish but you must not keep any fish in a water with 0 degrees of hardness. Water with no hardness is dead water and no fish can live in such a water for any length of time. The ideal hardness of the water for Discus fish, or many other types of tropical fish for that matter, is anything between 4 to 10 degrees GH.

I suggest you read the book by G. Keller on Discus fish which will give you a great deal of information of how to keep these fish and hopefully you will give up the idea of having a 'mixed' bag.

E.S.

## COMMENTARY

Continued from page 39

off the cash flow, what is the earthly sense in going in for an "instant" plastic pool, which is merely another financial transaction accompanied by minimal physical effort?

The "hasten slowly" school will always claim that its approach gives it the best possible understanding of the hobby. There is a great deal of real enjoyment in planning to collect certain species, but not to do so until really good specimens are obtainable. And there is always the additional bonus that the practice of gradually

filling your tank with fish always means that the residents have rather more room than they actually need. This will enable many of them—to the surprise of many fishkeepers who have seldom seen much more than mundane specimens—to grow and flourish to supreme show class without involving their owners in contributing anything more than patience. The dwarfing effect of running too many fish in confinement is not properly recognized by the majority of aquarists until a time which is often too late in the process. This will happen when an established collection begins to die off without replacements being introduced. As the numbers dwindle the survivors will often be seen to put on

size, colour and general condition hitherto not achieved even when things seemed to be at their very best. I can recall this happening to me some years ago when, amongst the residue of a very fine collection there were a few *Pristellas*. These silvery but not breathtaking fish often struggle for a place in tropical tanks because they are not immediately appealing. It was quite remarkable how very attractive these became when allowed more breathing space. If they had been allowed more than their bare ration in the first place they would have reached this level of excellence earlier and prevented me from buying less worthy species in the meantime, which failed anyway!

## Coldwater Jottings

Continued from page 38

cleaning the pond; the basket will also restrict the spread of the tuberous roots beyond their prescribed area. Newly planted Water Hawthorn plants should be started in shallow water, the depth being gradually increased as the leaves develop—as described for the Water Lily, in last month's article.

Propagation is a fairly simple matter, the easiest being to divide the rootstock with a sharp knife, making sure that each piece has both roots and a growth point from which the stems can develop. The other method is to grow extra plants from seed. The plant has a very free-seeding habit and individual seeds, which look somewhat similar in size and shape to a grain of wheat, can be placed upon the surface of a loam-filled plant-pot. The pot should be placed in a light, warm position and kept very moist until the seed has sprouted, it is then slowly lowered

beneath an increasing depth of water. Alternatively, sprouted seedlings, which have a fine grass-like appearance, can be gathered from the pond and planted in a tray sunk in shallow water. The young plants can be planted out in a sheltered position in the pond after the first pair of leaves have formed.

In water which has a depth of less than 12 inches it would be advisable to provide some protection during severe weather because any exposed rootstock will quickly succumb to the effects of frost and ice. Some growers prefer to cut back the growth and take the plants indoors before the onset of the winter. This, it is claimed, encourages a stronger growth during the following season; however, I prefer to leave my plants in the pond throughout the year. Perhaps I have been lucky, but I have not noticed any diminished vigour, nor have I lost any plants by leaving the plants in their growing positions.

There are two cultivated varieties available, one has pink flowers and the other has larger flowers. Of other species, most cannot be grown out-

doors in this country; however, if available *A. aruseanu* is a half-hardy type which may succeed in milder districts. It has small, slightly yellowish, creamy flowers which stand high out of the water and it prefers water with a depth of around nine inches.

A well-planned ornamental pond containing gracious Water Lilies and sweet-smelling Water Hawthorn will delight the senses of both sight and smell, as it invites the passer-by to pause and enjoy its pleasures.

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'Things they say' contributed by Graham Cox

"Sales of Kangaroo meat in Japan are growing by leaps and bounds".

*Mainichi Daily News*



# BREEDING Coldwater Fish

by  
Roy Pinks

WHILST the tropical enthusiast may well see the offspring of his breeding stock within a few weeks, the intending breeder of coldwater species is faced with a totally different time frame. Obviously some species like the Bitterling or Stickleback will seem to breed more quickly than larger species because they are usually obtained at maturity, and if they are introduced to a favourable environment in spring time, will usually have something to show for their efforts the same season. In the case of orfe, rudd, tench, carp and goldfish it may take several seasons to achieve pairs compatible in size and other respects for worthwhile spawning. Most coldwater species are difficult to sex at the best of times, though plumpness in the case of females and tubercles of one sort or another around the gill plates of the males may be useful guidance. Nevertheless, though you may have both sexes of fish they will not spawn fruitfully if they are out of topmost condition or if the pool fails to provide suitable conditions for the reception of spawn and the raising of fry. Let us look for a moment at the most natural of conditions likely to be experienced by captive fish. These would apply in a largish garden pool with a mixture of species—say orfe,

rudd and goldfish. There will be copious thickets of submerged aquatics like hornwort and elodea, together with shading from a variety of marginals and, generally, lily pads. There will probably be a frog or toad around and almost certainly a selection of newts (these do seem to be on the increase in recent years). Unless you are very fortunate there will be some blanket weed around the edge of the water, there may be duckweed and most certainly the larger insects like dragonflies, mayflies, pond skaters and water beetles will be manifest. Scoop out some of the water from the pool and you will see that there are scores of smaller creatures like fly nymphs, *daphnia*, water shrimp, *infusoria* and so on. All of these are in constant competition with one another, few actively likely to aid the infant fish you hope to see swimming around one day.

However, probably the majority of pondkeepers accept all these things and just have not the time or the inclination to go to great lengths to raise the fry, but would, all the same, like to have a few young fish to rear each season, either to replace losses or to add a size variation to the collection. In this case all that needs to be done is for the fish to be fed regularly—the left overs will be consumed by the surviving youngsters, who grow very rapidly. This crude method will yield very few survivors, and often none at all, but those which do make the grade should prove to be excellent

specimens, having survived all the local hazards. The next, rather more reliable method, is to arrange to have a few spare tanks dotted around near the pond into which young fish may be decanted shortly after developing from the egg. This process involves one in vigorously scooping water samples from the pool as often as one can in early summer. Young fish, usually a little over  $\frac{1}{2}$  in. long, will be clearly visible if a white container like a plastic margarine tub is used. You need lots of these, as the whole family tends to join in—an infectiously enjoyable pastime for any summer evening. The rest is a guessing game: which fry are goldfish and which are rudd? How about minnows? No scores allowed for newts, which are segregated and transferred to a local natural pond. In the course of removing these tiny fish you become more and more aware of the high proportion of predatory creatures which would certainly have seen them off if you had not taken control of the situation, and you must ensure that not a single stranger other than *daphnia*, perhaps, finds its way into the reception tank you have provided. Try to sort the young if you can into species: goldfish fry tend to proceed forwards in straight jerks, whilst those of the faster fish like rudd wriggle their bodies forward and tend to swim for longer distances in one go. Some discarded stockings or tights (the holes should not be too large!) stretched across the top of the tanks will prevent



# GUNTHER STERBA VISITS LONDON

— to launch new book

A CHANCE entry in a Canadian aquarist Society magazine about two years ago started a chain of actions which resulted in Gunther Sterba coming to England on 19th March 1983.

Following an invitation to address U.K. hobbyists, Dr Sterba's publishers asked the F.B.A.S. for assistance in finding a publisher to produce the English edition of his latest work. Blandford Press took on the task and as the book neared completion it was suggested that Dr Sterba be invited to the official Book Launch, and also to speak at the FBAS Convention planned for the same day.

At 4 p.m. on the 17th March, Dr. Sterba stepped off the plane at London's Heathrow Airport and we knew for certain that the events planned for the 19th were 'on.' (Up to that moment everything had just been a shade doubtful!) To our delight, Dr. Sterba spoke excellent English and soon made himself 'at home' over a dinner party that evening attended by FBAS President Bob Esson, Chairman Ken Saxby and Convention Organisers Joe Nethersell, Colin Richards and Dick Mills. To give some further insight into Dr. Sterba's character, the following evening he was even helping to collate the official Convention programmes after a sociable evening with members of the FBAS Tyne-Tees Area Association.

On the 19th, the Book Launch hosted by Blandford Press was followed by the Convention in the afternoon. The Jeffery Hall in the Institute of Education at London University was set out with Trade and Specialist Society Stands, its entrance foyer having displays of Furnished Aquaria. Both the Blandford Press and the FBAS Show Stands did brisk business and the comfort of the Logan Hall auditorium was the setting for Dr. Sterba's lecture.

Although his subject was to be 'Stories of Fishes', the uncertainty of the travel arrangements right up to the last minute together with, perhaps, doubts on his own ability

to convey precise 'fish information' in English, led Dr. Sterba to show us the story of his own involvement; both as a family man and scientist in addition to his recognised fame as an aquatic author. His slides showing his hobby of gem-cutting and cameo-carving revealed the artistic side of this very complete man. A question and answer period followed.

The refreshment break was the opportunity for a signing session of copies of 'The Aquarists' Encyclopaedia' (reviewed elsewhere in this issue) by Dr. Sterba. Dr. Christopher Andrews from the Tetra Information Centre then spoke on 'Fish Diseases—their prevention and cure' a lecture that was well constructed and illustrated albeit delivered at almost breakneck speed due to time limitations.

The traditional Raffle draw concluded the proceedings and there is no reward for guessing the first prize!

At the Commemorative Dinner at London Zoo that evening, Stuart Booth of Blandford Press and FBAS Chairman Ken Saxby both paid tribute to Dr Sterba's authorship and popularity throughout the hobby; FBAS President Bob Esson then presented Dr. Sterba with an FBAS Vice-Presidency together with the FBAS'

own Special Award for outstanding work in aquarium literature.

In his acceptance speech, Dr. Sterba was clearly moved as realisation of his popularity and fame with the hobbyists dawned upon him; in return he presented the FBAS with a leather-bound, gold-blocked edition of his classic work 'Freshwater Fishes of the World', the only other copy in this presentation binding being held by the Crown Prince of Japan.

The Federation's thanks go to Interpet Ltd whose most generous sponsorship made the Convention possible; to Blandford Press, who not only made Dr. Sterba's visit a reality but through whose publishing house Dr. Sterba's book can now reach English-speaking hobbyists.

Interpet Ltd., Tetra (U.K.) Ltd., British Cichlid Association, Association of Essex and East London Aquarists' Societies, aquarists displaying Furnished Aquaria, David Allison of Hendon A.S. our slide projectionist and John Dobbin of the Institute of Education Technical staff all helped considerably to make it a day to remember—the day that Sterba came to England.

Dick Mills



Celebrating the publication of *The Aquarist's Encyclopaedia* are (l.-r.) Sue Stevens (translator), Gunther Sterba (author), Stuart Booth (Blandford's Publishing Manager) and Dick Mills (technical editor)

# Book Review

by L. E. Perkins



**The Aquarist's Encyclopaedia** by Gunther Sterba, edited by Dick Mills. Published by Blandford Press, Poole, Dorset at £20.95.

Claimed to be "probably the most comprehensive work on the subject," this is a large book of reference of over 600 pages copiously illustrated with colour and monochrome photographs and drawings. It seems that no aspect of ichthyology, freshwater and marine aquatic life and aquarium keeping has been overlooked.

Gunther Sterba is a name to conjure with and he has earned the respect of aquarists internationally. A Czechoslovakian, Dr. Sterba studied Human biology and medicine in Prague and Jena and became a university lecturer. He is now Professor of Zoology and Animal Physiology, Director of the Zoological Institute and Head of

Research into Cell Biology and Regulation at the Karl Marx University in Leipzig.

This English language edition of the work has been supervised by Dick Mills of the Federation of British Aquatic Societies and in his preface he expresses his feelings at being accorded the honour of being associated with the work and the hope that his efforts and those of the translator, Susan Simpson, "have done nothing to impair the reputation of Dr. Sterba and his associates." We are confident that any fears on this score will prove groundless.

To review such a work as this is not so much daunting as impossible—one cannot settle down to a "good read" of an encyclopaedia but can merely browse, looking up references to aquatic aspects that come to mind. As the Oxford Dictionary has it: "an encyclo-

paedia is a book giving information on all branches of knowledge or of one subject." So, all aquaria apparatus, families and higher taxa of aquatic vertebrates, physiology, embryology and ethology are described along with diseases, rearing and feeding, ecology and water chemistry, plants and their anatomy and physiology and cultivation tips. Freshwater and marine invertebrates are fully covered giving descriptions of their biology.

A chunky, heavy tome measuring some 10½" × 7¼" × 2", one feels, initially, that its price will be amply justified by its contents. Dictionaries have been available in this realm of interest but nothing before has appeared that has filled the need that this work will satisfy for those who have become committed to the intricacies of understanding life in water and the support of their charges. L.E.P.



## Turquoise Discus

UPON reading an item in the March issue of the *Aquarist & Pondkeeper* concerning the validity of certain Schmidt-Focke Turquoise Discus, I feel that I must write to express a view of somewhat frustrated confusion. In the piece concerned, Mr Eberhard Schulze states that for the past eight years he, at the Highgate Aquarist, has been the sole agent for the import of such fishes and that nowhere else in the

U.K. can genuine Schmidt-Focke bred Discus be purchased.

What happens then if a person purchases a genuine pair of Schmidt-Focke Discus from Mr Schulze, successfully breeds them and raises the offspring to offer them for sale as Schmidt-Focke Turquoise Discus as are the parents. According to Mr Schulze the only genuine Schmidt-Focke bred Discus are available from him. If so, what does our breeder call his young fish? If he calls them Schmidt-Focke he is according to Mr Schulze, guilty of misrepresentation, as the fish cannot be such as they have not originated from him, the only U.K. supplier of such fish.

Our breeder is just as badly off if he takes the young to another dealer, as to quote Mr Schulze "no other dealers, whether they are in Wales or Scotland, in certain parts of London or basically

just anywhere, will have genuine Schmidt-Focke bred Turquoise fish for sale." Does this mean that the fish do not breed true? Or is it that the term Schmidt-Focke bred means that only those fish bred by Dr Schmidt-Focke, irrespective as to who breeds the offspring when mature, can be called Schmidt-Focke Discus. In other words is the term just a name coined for profit or is it the name of a valid strain. If the latter is the case the name should stay with the fixed strain and their offspring as it is the correct name for that colour variety. Surely it does not mean that the young from Schmidt-Focke parents are not Schmidt-Focke fish. Does it?

I would also be interest to know as to how a certificate would alleviate the situation of malpractice quoted by Mr Schulze as due to the variation of markings exhibited by lots of Discus

not just line bred ones, a single specimen could not be accurately described without the aid of a photograph. Also, if someone buys young discus how are these to be described as they are obviously going to undergo radical changes as they grow up.

Such a certificate therefore can only be a token gesture to certify the authenticity of such fishes as it only states that Mr X purchased genuine Schmidt-Focke bred Discus on a certain date. It cannot prove that the fish Mr X may decide to sell in the future is the same fish as originally purchased. We only have Mr X's word for it. Thus this certificate cannot eliminate the possibility of anyone passing off fishes as Schmidt-Focke Discus even if they are not.

In conclusion I can only say that, as previously stated, such an action in having to issue a certificate to authenticate a fish's pedigree either casts serious doubts as to the validity of the strain concerned or it is a sales gimmick designed to channel sales through one source. When one considers the former this seems to be far from the truth as Dr Schmidt-Focke has spent countless periods of time, effort as well as great amounts of money in his struggle to perfect a magnificent strain of Discus which enhances the hobby greatly. The latter statement however has more frightening implications, especially when considered with the references to nastiness in the hobby.

That Mr Schulze has the sole rights to import Schmidt-Focke Discus I have no doubt but to state that there are no others anywhere particularly in view of the previous comments is very misleading. Moreover the statement regarding no other genuine Schmidt-Focke Discus being available in Wales or Scotland etc, despite seemingly inoffensive, takes on a more serious tone when one considers the fact that it is normally worded England, Ireland, Scotland and Wales and looks on the inside back cover of the same magazine to locate a large advert by a large Discus breeder resident in Wales specialising in Turquoise Discus. I trust however that this is just a literary

slip by Mr Schulze and not a personal touch of nastiness or lack of professional courtesy, as it will no doubt be appreciated that good manners and correct professional ethics is the only way to ensure the future survival of the hobby.

Mr Schulze has of course the right of reply and I look forward to receiving his comments.

#### A. B. Cass Macclesfield

##### The right of reply

I BELIEVE a certain amount of confusion has been created by The Highgate Aquarist with the issue of a 'Certificate of Origin' for the purchase of Turquoise Discus Fish. These Certificates of Origin were originally intended to be issued only for the purchase of Dr E Schmidt-Focke's bred fish but they could easily be given to anyone for the purchase of a Turquoise Discus Fish bred by Herr R Kurth of W. Germany, another well-known breeder with his own fixed strain, represented in the UK by The Highgate Aquarist, or could, in fact, be issued for the purchase of any other colour variety, strain or breeder currently available and sold by The Highgate Aquarist.

The idea of the Certificate of Origin, as far as The Highgate Aquarist is and was concerned, was to offer the customer proof of Breeder, Colour, Type or Strain and Date of Purchase.

My intention was not, by any means, to belittle the achievements of any breeder of Discus Fish who successfully spawned and raised the youngsters of any variety of Turquoise Discus Fish but make a clear distinction between Turquoise Discus Fish 'bred' by Dr E Schmidt-Focke and others. It is quite true that the Highgate Aquarist has, over the years, sold many thousands of Dr E Schmidt-Focke's bred Turquoise Discus Fish, as well as many Dr E Schmidt-Focke raised and established breeding pairs and as a result a great number of breeding pairs must be 'performing' by now. Any breeder of these pairs fortunate enough to successfully breed from these, is indeed entitled to offer these youngsters as a 'Schmidt-Focke Turquoise Discus,' since they have been a well established fixed strain.

It is quite true that Dr E Schmidt-Focke has spent a great deal of time and money to perfect a magnificent strain of Discus Fish; it is but a sad fact, that Dr E Schmidt-Focke has also on occasions been accused of having produced and sold 'rubbish' fish, where as on further investigation it came to light that these 'rubbish' fish were not bred by him at all but his name was used to help with the sale of these fish and for this reason, and this reason alone the Certificate of Origin was first issued. After all, Dr E Schmidt-Focke is by many considered to be the breeder of Turquoise Discus fish in the world, and as not every piece of gold is Gold (would one trust a piece of gold without a hallmark?), not every seemingly Turquoise Discus fish is an actual Turquoise Discus fish.

Any discerning Discus fish keeper will certainly know his fish and also knows what to expect from youngsters and the issue of a Certificate of Origin would probably be a waste of time but a gullible newcomer to the hobby, who is already more than confused by the various—often not too clearly defined definitions of colour and markings, be sure of his purchase. As most baby Discus fish, whether they are 'Browns' or 'Turquoise' or anything else, look very much alike, the issue of such a Certificate of Origin will at least give the purchaser a guarantee.

The Certificate of Origin may indeed be considered nothing but a sales gimmick by some but at least any customer who had intended and made the effort to visit the Highgate Aquarist to purchase Dr E Schmidt-Focke's bred Turquoise Discus fish will have the certain knowledge and assurance that his Discus fish were in fact bred by Dr E Schmidt-Focke.

E. Schulze, Highgate

#### CORRECTION

The Oranda goldfish was erroneously described in Coldwater Questions Answered, April issue, as having no dorsal fin. We regret this defamation of the Oranda's characteristics.

# NEWS...



## SOUTH EAST



AFTER their Bi a.g.m., Sudbury A.S. now have a new Club Secretary, he is Mr. K. Wilson, 25 Harford House, 35 Twickenham Crescent, London W11 1AY.

A VERY enjoyable evening was held at the Memorial Hall, Belling, Harne Bay on the second Tuesday of March, when two members of the East Kent Aquatic Study Group gave an educational talk to other members entitled, "Care for the Home Aquarium." The speakers were John Edwards and Frank Scar who brought along many specimens for members to study. One specimen, a magnificent Whiptail was to be seen caring for eggs which were spawned just twenty-four hours earlier, also present were several broods of young Corydoras and Whiptails which had been bred by Frank. After the talk these young fish were sold by auction to Club members. Table Show results were: Corydoras: J and S. G. Neves; 2, T. Webb; 4, S. Webb; Loaches: 1, 2 and 3, K. Woby; 4, J. Gilbert. The guest judge was Bill Hastings.

THERE was a very good attendance at the March meeting of Mid-Sussex A.S. It was the annual competition with Brighton A.S. the first leg of 'Over the Downs' table show. The evening finished with Mid-Sussex gaining 35 points and Brighton 25 points. The judge was Jack Stillwell. Members also watched a film on Lake Malawi. For the last meeting at Ockley Lodge Keymer. For any information on future meetings please get in touch with J. Smith, Secretary, 51 Barbourne Road, Brighton BN2 4DL. (BTN 602407).

FOLLOWING the usual club business South Park Aquatic (Study) Society members and visitors enjoyed a very interesting and informative lecture by Mrs. Helen Bentley of Fishcare, about the identification and treatment of fish diseases. Helen recommended simple remedies such as salt, formalin and dipnets to deal with a wide variety of ailments. Good conditions and live foods and a suitable quarantine period should go a long way to avoiding health problems. The society specialises in coldwater fishkeeping and meets at 8 p.m. on the 2nd Tuesday of every month at the Wimbledon Community Centre, St. George's Road, London SW19. New members and visitors always welcome. Full details from: Mrs Margaret Dudley, 163 South Park Road, Wimbledon, London SW19 8RX. (Tel: 01-540 3662).

THE officers elected at Haringey A.S. a.g.m. are: Chairman, Mr. T. Walmesley; Secretary, Miss S. Grogan; Treasurer, Mrs. B. Walmesley; Show Secretary, Mr. A. J. Dempsey; Membership & Liaison Secretary, Mr. J. Taylor; Social Secretary, Mr. P. Balgún; Editor of Guppy Gossip, Mr. T. Laughlan (the Societas Magazine). The Society meets on the first and third Thursday of every month at Pax (Scots) Hall, 59 Park Road, Hornsey, London N.4, at 8.15 p.m. Membership Secretary Mr. J. Taylor, 65 Esherley Road, Tottenham, London N.15.

Results of first open show held on 6th March: Bar: 1, B. Hastings (SELAS); 2, J. Parr (L.T.E.); 3, P. R. Summers (SELAS); Bar: 1, C. Richards (Sudbury); 2 and 4, Mrs.

# From Aquarists' Societies

D. Cruickshank (Hendon); 3, A. Dempsey (Haringey); Ca: 1, H. Smith (Sudbury); 2, B. Walmesley (Sudbury); 3, Mrs. P. Edwards (EKASG); 4, Dave Winder (EDAS); Co: 1, Mrs. P. Edwards; 2, T. A. Cruickshank (Hendon); 3, Doris Winder (EDAS); 4, R. Orr (Sudbury); Ca: 1, J. Edwards (EKASG); 2, Doris Winder; 3, A. Cole (Sudbury); 4, B. Walmesley; Di: 1, P. R. Summers; 2, P. Riley (BDIAS); 3, T. Cruickshank; 4, W. Chapman (GLADAS); Di: 1, M. Draper (Tombury); 2, C. Smith (EDAS); 3, P. Riley; 4, W. Chapman; Di: 1, J. Rowley (Bentley Heath); 2, G. Hicks (Bentley Heath); 3, D. Brooks (Croydon); 4, R. Hayes (Haringey); E: 1 and 2, Dave Winder; 3, Mrs. P. Edwards; 4, C. Smith; Bar: 1, F. Scare (EKASG); 2, T. Laughlan (Haringey); 3, T. Gibson (Sudbury); 4, W. Chapman; F: 1, C. Cheswright (SLADAS); 2, Mrs. D. Cruickshank; 3, P. R. Summers; 4, D. Cheswright (SLADAS); G: 1, T. Cruickshank; 2, J. Edwards; 3, Mrs. D. Cruickshank; 4, J. Parr (L.T.E.); H: 1, J. Rowley; 2, B. Hastings; 3, Dave Winder; 4, H. Smith (Sudbury); I: 1, Doris Winder; 2, T. Gibson; 3, P. Mills (WDAS); 4, H. Smith; K: 1 and 2, T. Walmesley (Haringey); 2 and 4, D. Millan (WDAS); L: 1, Dave Winder; 2, A. Dempsey; 3, C. Richards; 4, J. Edwards; La: 1, Mr. J. Edwards (EKASG); 2, 3 and 4, J. Draper (Tombury); M: 1, A. Stern (Haringey); 2, G. Hicks; 3, J. Rowley; 4, P. Riley; N: 1, D. Ridgwell (SLADAS); 2, T. Laughlan; 3, F. Scare; 4, R. Johnston (SLADAS); No-T: 1, P. Mills; 2, F. Scare; 3, J. Parr; 4, H. Smith; O: 1 and 2, T. Laughlan; 3, W. Chapman; 4, A. Dempsey; P: 1 and 3, R. Orr; 2, P. Bentley (EDAS); 4, P. R. Summers; Q: 1, B. J. Dixon (EDAS); 2, M. Marsh (Hendon); 3, S. Pursewood (WDAS); 4, Mrs. P. Edwards; R: 1, M. Marsh; 2, G. Rowley (Bentley Heath); 3, S. J. Hardy (Rounded); 4, N. Brown (SELAS); S: 1 and 2, H. Smith; 3, B. Hastings; 4, 1 and 4, S. Pursewood; 2, P. Mills; 3, P. Riley; U: 1, J. Parr; 2, P. Mills; 3, J. Taylor (Haringey); 4, P. R. Summers; V: 1 and 3, T. Laughlan; 2, V. Cornam; 4, J. Maloney (SEI and D.A.S.); W: 1, J. Taylor; 2 and 4, G. Sorpece (Rounded); 3, C. Cheswright; X: 1, F. Scare; 2 and 4, D. Ridgwell; 3, Amanda Grimes; X-1: 1, 3 and 4, F. Coe (WDAS); 2, D. and P. Lambert (Kingston); X-2: 1, P. Mills; 2: 1, G. Hicks; 2, T. Gibson; 3, P. R. Summers; 4, P. Mills.

## SOUTH WEST



AN extra meeting of the West Cornwall Fishkeepers was arranged in March to meet Roger Wilkinson of Aquatic Enterprises, Devon, who gave a most interesting lecture on the African Rift Lake Cichlids. The meeting was well attended and enjoyed by all. Thanks go to Roger for his efforts. Next month's meetings include our Cheese and Wine evening and a talk on Fish Food recipes by our own chef, Eddy Masby. Holidays aquarists are most welcome. Enquiries to Chairman, Money Ray on Camborne 718910 or Len Gill on 714547.

DURING an evening devoted to gadgets by Bristol A.S. one of the best ideas came from Graham Smith. This was an automatic

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

feeder for fry. This consisted of a piece of Perspex through which a number of holes had been drilled in a circle so that it looked like a telephone dial but with fewer numbers. Above this was mounted a small clock, face downwards. A small brush or scraper was fixed to the drive and this swept a small pile of food, placed between the holes, through the holes into the aquarium. Graham claims that the extra feeds certainly gave extra growth. The Nationwide Trophy this year will be for Lichfields and will be staged at Bristol on 10th September. Show Secretary: J. Millett, 87 St. John's Lane, Bristol BS3 5AB (0272-712383).

## EAST



Great Yarmouth and District A.S. meet on 10th May, 7.30 p.m. at the Imperial Hotel, North Drive, Great Yarmouth, for a visit and talk from Dr. Vivian De Thabrew on "Aquatic Pisces" with slides from Dr. De Thabrew about his work at Saboda. On 14th May the society will visit "Wildwoods" Water Garden Centre, London to see the plant communities and purchase things aquatic. All enquiries to Frankie White as soon as possible (tel: Great Yarmouth 740291 evenings). On 6th June the society meet at the Imperial Hotel, North Drive, Great Yarmouth for an evening entitled "Do It Yourself" by Ray Andrews. Visit to Northborough Trout Farm on Saturday 19th June. Any enquiries contact Frankie White.

## NORTH



RESULTS of Kelghley A.S. 15th annual open show on 6th March. Grouping: 1, Mr. and Mrs. Rodway (Darlington); 2, D. Barker (Wyle); 3, C. Heag (Kelghley); Pisces: 1, D. Barrett (BBC Thomas); 2, R. Sharp (Bosfield); 3, M. Simpson (Orley); Mollies: 1, T. Reid (Workson) - (Best in Show); 2, Mr. Lloyd (Workson); 3, R. Beall (Huddersfield); Swordtails: 1, D. Barrett; 2, R. Upton (Wyle); 3, G. Barlow (Accrington); A.O.V. Livebearers: 1, T. Reid (Workson); 2, S. Wilson (Ebor); 3, D. Barrett. Small Characins (over 7 cm): 1 and 2, R. Walsh (Darwen); 3, G. Cummins (Kelghley); Large Characins (over 7 cm): 1, J. Riley (Leeds F.O.); 2 and 3, R. Walsh. Endemic Fish Lake Cichlids: 1, J. Jackson (Kelghley); 2, J. Ward (Ebor); 3, Mr. and Mrs. Pickford (H.C.A.G.); Angels: 1 and 3, Master J. Maxwell (York); 2, Mr. C. Calvert (York); A.O.V. Cichlids (10-10 cm): 1, J. Riley; 2, T. Matthews (Sheaf Valley); 3, K. M. Fisher (S. & J.A.S.); A.O.V. Cichlids (over 10 cm): 1, M. R. Smith (Hull); 2, Mr. and Mrs. Rodway (Darlington); 3, B. Brook (Huddersfield); Rasboras and Minnows: 1 and 3, D. T. Miller (Darwen); 2, J. Riley; Danios: 1, R. Beall; 2, R. Cartwright (Orley); 3, D. Armitage (Sutton). Small Barbs (10 cm): 1 and 3, J. Cartwright (Huddersfield); 2, J. Riley. Large Barbs (over 10 cm): 1, M. R. Smith; 2, M. Storey (Orley); 3, G. Cummins; A.V. Apistogramms: 1, B. Lyden (Kelghley).

2, Mr. and Mrs. Pickford, A.O.V. Killifish; 1 and 3, I. Johnson (I. & E.); 2, Mr. and Mrs. Snowden (York). Small Anabantids (to 10 cm): 1, J. Riley; 2, D. T. Milner; 3, P. D. Greenwood (Independent). Large Anabantids (over 10 cm): 1, Mr. and Mrs. Pickford; 2, Mr. and Mrs. Kenworthy (Oley); 3, Mrs. E. Wright (Keighley). Fighters True Colour: 1, Mr. and Mrs. Brackebury (I.C.A.G.); 2, G. D. Coon (S. & J.); 3, J. Riley. Fighters Mottl Colour: 1, Mr. and Mrs. Brackebury; 2, Mr. and Mrs. J. Riley (Linda P.O.); 3, M. Gross (Independent). Corydoras and Brochis: 1, M. Simpson (Oley); 2, Mrs. E. Wright (Keighley); 3, G. Winder (Walsall). A.O.V. Catfish: 1, K. M. Fisher (S. & J.); 2, Mr. Hagen (Ewer); 3, R. Walsh. Loaches and Botia: 1, Mr. and Mrs. Richardson (Scarborough); 2, Mr. and Mrs. Pickford; 3, Mr. and Mrs. Carr (Grimsthorpe). Sharks: 1, B. Upton; 2, Mr. Rodway (Darlington); 3, D. Wachtler (Independent). Foxes: 1, M. Sawyer; 2, R. Brail (Huddersfield); 3, J. Riley. A.O.V. Tropical (to 15 cm): 1, Mr. Silk (S. & J.); 2, G. D. Coon; 3, J. Hestline (Sutton). Pairs (Livebearers): 1, Mr. and Mrs. Lloyd (Workshop)—Best Exhibit; 2, D. Barrett; 3, Mr. and Mrs. Campbell (Harrogate). Pairs (Egglayers): 1, T. Reid (Workshop); 2, J. Cartwright (Huddersfield); 3, Mr. and Mrs. Richardson. A.V. Female (Livebearers): 1, Mr. and Mrs. Lloyd; 2, D. Barrett; 3, G. D. Coon. A.V. Female (Egglayers): 1, D. T. Milner; 2, J. Riley; 3, Mr. Silk. Breeds (Livebearers) 3 and 4; 1, G. D. Coon; 2 and 3, Mr. and Mrs. Pickford. Breeds (Egglayers) 3 and 4; 1 and 3, Mr. and Mrs. Brackebury; 2, Mr. and Mrs. Pickford. Huddersfield: 1, B. Book (Huddersfield); 2, P. Jackson (Keighley); 3, D. T. Milner. Common Goldfish: 1, S. Boyle (Grimsthorpe); 2, Mr. and Mrs. Silk (S. & J.); 3, Mrs. E. Wright (Keighley). Fancy Goldfish: 1 and 2, Mr. and Mrs. Silk; 3, R. Brook. A.O.V. Goldwater: 1, T. Reid; 2, S. Simpkins (Independent); 3, Mr. and Mrs. Snowden. Mini Jars: 1 and 2, Mr. and Mrs. Brackebury; 3, Mrs. E. Wright. Selling Class: 1, Mr. Lloyd (Workshop).

**RESULTS of Shropshire and District A.S. open show on the 20th March.** Best Exhibit: M. Johnson (80 pts). Class Breeders Live 1-2 and Best Fish in Show: Mr. and Mrs. P. Howell (77 pts). A.O.V. Catfish: Guppies: 1, Bryan (KE); 2, D. Barker (WY); 3, F. Barker (WY). Mollies: 1, Mr. and Mrs. Johnson (IE); 2 and 3, Mr. and Mrs. Sellers (Ind.). Swordtails: 1, M. Johnson (SIS); 2, F. S. Draycott (AD); 3, Bryan (KE). Platies: 1, Mr. and Mrs. Sellers (Ind.); 2, F. S. Draycott and Son (AD); 3, Mr. and Mrs. Hooley (WOR). A.O.V. Livebearers: 1, N. Craddock (KE); 2, F. S. Draycott (AD); 3, M. Johnson (SIS). Small Barbs: 1, M. Farrow (LI); 2, Mr. and Mrs. P. Howell (AD); 3, Mr. and Mrs. Pickford (HCAG). Large Barbs: 1, Mr. and Mrs. P. Howell (AD); 2, F. S. Draycott (AD); 3, Mr. and Mrs. Pickford (HCAG). Small Characins: 1 and 2, Mr. and Mrs. Lake (G & C); 3, L. Pearson (G & C). Large Characins: 1 and 2, L. Barker (WY); 3, K. Linton (Ind.). Corydoras: 1 and 2, Mr. and Mrs. Hooley (WOR); 3, F. S. Draycott (AD). Botia/Loaches: 1, Mr. and Mrs. Hooley (WOR); 2, Mr. and Mrs. Sellers (Ind.); 3, Mr. and Mrs. Pickford (HCAG). A.O.V. Catfish: 1, Mr. and Mrs. P. Howell (AD); 2, L. Marshall (IE); 3, F. S. Draycott (AD). Sharks/Foxes: 1, Mr. and Mrs. Marshall (IE); 2, Mr. B. Upton (WY); 3, Mr. and Mrs. P. Howell (AD). Dwarf Cichlids: 1, Mr. and Mrs. Sellers (Ind.); 2, Mr. and Mrs. S. J. Boyle (GR); 3, Mr. and Mrs. A. Frisby (WY). Large Cichlids: 1, J. Brown (LI); 2, Mr. and Mrs. Frisby (WY); 3, Mr. and Mrs. Sellers (Ind.). Endemic Cichlids: 1, Mr. and Mrs. Lake (G & C); 2, A. Irons (KE); 3, K. Whittington (GR). Angels: 1, Mr. and Mrs. P. Howell (AD); 2, Mr. and Mrs. Johnson (IE); 3, Mr. and Mrs. S. J. Boyle (GR). Small Anabantids: 1, Mr. and Mrs. Farrow (LI); 2, Mr. and Mrs. P. Howell (AD); 3, F. S. Draycott and Son (AD). Large Anabantids: 1 and 2, Mr. and Mrs. P. Howell (AD); 3, Mr. and Mrs. Pickford (HCAG). Mollie/Danio: 1 and 2, Mr. and Mrs. Lake (G & C); 3, R. C. Laverick (WY). Rishoras: 1, 2 and 3, Mr. and Mrs. Lake (G & C). Toothcarp: 1, Mr. and Mrs. Farrow (LI); 2, Mr. and Mrs. Lake (G & C); 3, Mr. and Mrs. Frisby (WY). A.O.V. Tropical up to 15 cm: 1, Mr. and Mrs. P. Howell (AD); 2, G. D. Coon (SIS); 3, Mr. and Mrs. Hooley (WOR). Over 15 cm: 1, Mr. and Mrs. Elwick (LI);

2, Mr. and Mrs. P. Howell (AD). Breeders Live 1-2: 1, M. Johnson (SIS); 2 and 3, F. S. Draycott (AD). Live 3-4: 1, G. D. Coon (SIS); 2, B. Upton (WY); 3, Mr. and Mrs. Pickford (HCAG). Breeders Egg 1-2: 1, A. Littlewood (DA); 2, Mr. and Mrs. Hooley (WOR); 3, Mr. and Mrs. Silk (SIS). Breeders Egg 3-4: 1 and 2, Mr. and Mrs. Brackebury (HCAG); 3, F. S. Draycott (AD). Pairs Live: 1, H. Ackroyd (DO); 2, M. Johnson (SIS); 3, N. Craddock (KE). Pairs Egg: 1 and 2, Mr. and Mrs. Lake (G & C); 3, W. Craddock (KE). Goldfish/Comets: 1, Mr. and Mrs. Silk (SIS); 2, S. P. Boyle (GR); 3, N. Craddock (KE). Fancy Goldfish: 1 and 2, Mr. and Mrs. Silk (SIS); 3, D. Southworth (AMGK). A.O.V. Goldwater: 1, Mrs. Stobbs (Ind.); 2, Mr. and Mrs. Silk (SIS); 3, Mr. Frisby (WY). A.O.V. Female Egg: 1, Mr. and Mrs. Silk (SIS); 2, Mr. and Mrs. Brackebury (HCAG); 3, R. C. Laverick (WY). Female Live: 1, F. S. Draycott (AD); 2, N. Craddock (KE); 3, M. Johnson (SIS). A.O.V. Junior: 1, K. L. Johnson (SIS); 2, M. C. Hale (LI); 3, L. Semmers (LI). Fighters True: 1, G. D. Coon (SIS); 2, Mr. and Mrs. Brackebury (HCAG); 3, L. Pearson (G & C). Fighters Mottl: 1, Mr. and Mrs. Brackebury (HCAG); 2, N. Craddock (KE); 3, M. Johnson (SIS). Plants: 1, Mrs. M. Burr (SK); 2 and 3, Mr. and Mrs. P. Howell (AD). Mini Jars: 1, Mr. and Mrs. Hooley (WOR); 2 and 3, Mr. and Mrs. Brackebury (HCAG). Abbreviations: KE: Keighley; WY: Wyke; IE: Ilkley; LI: Linton; WOR: Worsop; DO: Doncaster; DA: Darfield; SK: Skipton; GR: Grimsthorpe & District; HCAG: Hobbies Centre Aquarist Group; G & C: Gresham and Cleethorpe.

**RESULTS of Hobbies Centre Aquarist Group first open show.** Best in show, Mr. and Mrs. Silk (Pocklington). Best Breeders and also Best Exhibit, Mr. and Mrs. Brackebury (HCAG). Best Pairs: Mr. and Mrs. Lloyd (Workshop). Guppies: 1, F. S. Draycott and Son (A and D); 2, P. Barker (Wyke); 3, K. Lancashire (Doncaster). Platies: 1, Mr. S. Sharp (Bradford); 2, Mr. and Mrs. P. Campbell (Harrogate and District); 3, Mr. and Mrs. Lloyd (Mollies); 1, T. Reid (Workshop); 2, Mr. and Mrs. Lloyd; 3, Mr. and Mrs. Sellers (York). Swordtails: 1, Mr. and Mrs. Allen (Gimshy and Cleethorpe); 2, S. Littlewood (Withernsea); 3, Mr. and Mrs. Sloe. Gambusia: 1, 2 and 3, F. S. Draycott and Son (A and D). Poecilia/Micropoecilia: 1, D. Barrett (BBC); 2, Mrs. Anderson (Wyke); 3, M. Johnson (SIS). Xiphophorus: 1, D. Barrett; 2, F. S. Draycott and Son; 3, Mr. and Mrs. Colley (HCAG). Goodidae: 1, D. Barrett; 2, Mr. and Mrs. Frisby (Wyke); 3, C. Taylor (Hull). Brachycephalus/Heterandria: 1, M. Johnson; 2, F. S. Draycott and Son; 3, G. D. Coon (SIS). Phellichthys: 1, Mrs. Anderson (Wyke). (neotetraodon, etc.): 1, M. Johnson; 2, F. S. Draycott and Son; 3, Mr. Stanfield (Bradford). A.O.V. Livebearers not listed: 1, D. Barrett; 2, A. Littlewood (Darfield); 3, F. S. Draycott and Son. Small Barbs: 1, Mr. and Mrs. Lloyd; 2, Mr. and Mrs. Farrow (Lincoln); 3, B. Upton (Wyke). Large Barbs: 1, R. C. Laverick (Wyke); 2, Mr. and Mrs. Pickford (HCAG); 3, Mr. and Mrs. P. Howell (A and D). Angels: 1 and 2, Master J. Maxwell (York); 3, Mr. and Mrs. P. Howell. Small Cichlids: 1, Mr. and Mrs. Riley (Linda P.O.); 2, Mr. and Mrs. Frisby; 3, Mr. Cook (Wyke). Large Cichlids: 1, Mr. and Mrs. Sloe; 2, Mr. and Mrs. Newham (HCAG); 3, Mr. and Mrs. Riley. Endemic Rift Lake Cichlids: 1, Mr. and Mrs. Lake (Gimshy and Cleethorpe); 2, V. R. Black (Catter); 3, Mr. Byron (Independent). Small Characins: 1 and 2, Mr. and Mrs. Lake; 3, L. Pearson (Gimshy and Cleethorpe). Large Characins: 1, Mr. and Mrs. Colley; 2, Mr. and Mrs. Riley; 3, Mrs. Anderson (Wyke). Small Anabantids: 1, Mrs. Anderson; 2, Mr. and Mrs. P. Howell; 3, F. S. Draycott and Son. Large Anabantids: 1 and 2, Mr. and Mrs. Howell; 3, Mr. and Mrs. Pickford (HCAG). Fighters: 1 and 2, Mr. and Mrs. Brackebury (HCAG); 3, G. D. Coon. Fairy (Egglayers): 1, Mr. and Mrs. Lake; 2, F. S. Draycott and Son; 3, Mr. and Mrs. Richardson (Scarborough). Pairs (Livebearers): 1, Mr. and Mrs. Lloyd; 2, F. S. Draycott and Son; 3, R. Cranidge and Lister (Ashby). Sharks and Foxes: 1, B. Upton (Wyke); 2, Mr. and Mrs. Marshall (I and E); 3, Mr. and Mrs. Brackebury. Loaches/Botia: 1, E.

Bowler (Independent); 2, Mr. and Mrs. Richardson; 3, Mr. and Mrs. Pickford. Rishoras: 1, 2 and 3, Mr. and Mrs. Lake. Danio/Mollies: 1, Mr. and Mrs. Lake; 2, Mr. and Mrs. Brackebury; 3, Mr. Cook (Gimshy and Cleethorpe). Female (Egglayers): 1, R. C. Laverick (Wyke); 2, Mr. and Mrs. Riley; 3, Mr. and Mrs. Colley. Female (Livebearers): 1, D. Barrett; 2, F. S. Draycott and Son; 3, Mrs. Anderson (Wyke). Small A.O.V. Tropical: 1, G. D. Coon; 2, Mr. and Mrs. Riley; 3, M. Black (Catter). Large A.O.V. Tropical: 1, Mr. and Mrs. Smith (Lincoln); 2, Mr. and Mrs. Elwick (Lincoln); 3, Mr. and Mrs. P. Howell. Corydoras/Brochis: 1, Mr. and Mrs. Frisby; 2, F. S. Draycott and Son; 3, M. Johnson (SIS). Small Catfish: 1, Mr. and Mrs. P. Howell; 2, Mr. and Mrs. Newham; 3, J. Clark (Doncaster). Large Catfish: 1, J. Marshall (I and E); 2, V. R. Black (Catter); 3, T. Proggan (Skipton). Breeders (Egglayers): 1 and 2, 1, M. and Mrs. Silk; 2, Mr. Hewitt; 3, Mr. and Mrs. Bolton (Pocklington). Breeders (Egglayers) 3 and 4; 1, Mr. and Mrs. Brackebury; 2, Mr. and Mrs. Bolton; 3, F. S. Draycott and Son. Breeders (Livebearers) 1 and 2; 1, M. Johnson (SIS); 2, F. S. Draycott and Son; 3, D. Barrett (BBC). Breeders (Livebearers) 3 and 4; 1, Mr. and Mrs. Colley (HCAG); 2, R. Upton (Wyke); 3, G. D. Coon. A.O.V. Killifish: 1, Mr. and Mrs. Lake; 2, Mr. and Mrs. Johnson (I and E); 3, Mr. Cook (Gimshy and Cleethorpe). A.O.V. Aphrotesion: 1, F. S. Draycott and Son; 2, Mr. and Mrs. M. Farrow (Lincoln); 3, E. Bowler (Independent). Goldfish and Comets: 1 and 2, Mr. and Mrs. Silk; 3, C. Carter (Ashby). Fancy Goldfish: 1 and 2, Mr. and Mrs. Silk; 3, Mr. and Mrs. Newham. A.O.V. Goldwater: 1, T. Reid (Workshop); 2, Mr. and Mrs. Snowden (York); 3, Mr. S. Simpkins (Independent). Junior (Egglayers): 1, Spencer Stanfield (Bradford); 2, Christopher McHale (Lincoln); 3, D. and R. Draycott (A and D). Junior (Livebearers): 1, J. and K. Johnson (SIS); 2, D. and R. Draycott. Plants: 1 and 2, Mr. and Mrs. P. Howell. Furnished Jars: 1 and 2, Mr. and Mrs. Brackebury. Novelty Jars: 1, 2 and 3, Mr. K. Lancashire (Doncaster).

Highest pointed Society: A and D.  
**THE British Killifish Association 1983 Annual Convention** is to be held at York University over the weekend of 20th & 21st September and 1st October. For the first time in the history of the B.K.A., the Convention is to be opened to the public in an effort to give more aquarists the opportunity to see quality Killifish at close quarters, and to obtain advice first-hand. On Saturday 1st October they will be holding a show which will be open to exhibitors from outside the B.K.A., and also an open section of Killifish. In addition, members of the public will be able to attend lectures by Dr. Dick Armstrong, Ed Purzl and Rued Wilderkany, internationally acknowledged experts in the field of aquarist Killifish.

**Southern Livebearers Aquatic Group, Yorkshire Group, meetings:** 21st May, 17th September, 19th November (agn). All meetings commence 7 p.m. at Thomas Assembly Rooms, just off the M15. Details from T. Smith, 41 Hillierthorpe Road, Bratton, Yorks.

**NEW SECRETARY**  
The new secretary for Lytham A.S. is Robin Nichols, 31 Larnach Drive, Freshfield, Preston, Lancs.

**SCOTLAND**



Paisley & District A.S. hold meetings on 1st February and 1st March. Tableshows and results: February: All Catfish, Loaches and Sharks—Senior League—Catfish: 1 and 4, Bill

Dunbar; 2, Stuart Hamilton; 3, Ian Lindsay. Sharks: 1 and 3, Ian Lindsay; 2, Stuart Hamilton; 4, Evelyn Lindsay. Junior League—Catfish: 1, Alan Patterson. Loaches: 1, Alan Patterson; 2, Richard Brooking. March: Guppies, Aquatic Plants, A.O.S. Fish—Senior League—A.O.S.: 1 and 2, Ian Lindsay; Guppies: 1, Jim McGurn; 2 and 4, Ian Lindsay; 3, Evelyn Lindsay. Meetings are held on the first Tuesday of every month at the Paisley Museum & Art Galleries, High Street, Paisley at 7.15 to 9.15 p.m. Everyone welcome. Further information can be obtained from the Club Secretary, Mrs. E. Lindsay, 71 Wright Street, Raithwa P44 8AS (Phone: 041-889 3772).

## Dates for the diary

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

### MAY

1st May: The Norwich Section of the **BRITISH KOI KEEPERS' SOCIETY** monthly meeting in Norwich at the home of Mr. C. E. Page. For further details contact the Secretary, Mrs. O. Crosby on Norwich 412095.

1st May: **HULL A.S.** open show at the Shire Hall, Howden. Benching 12 noon to 2.00 p.m., judging 2.00 p.m. Show Secretary, G. Andrews, 4 Church Mount, Spoutley, Hull HU11 4PX.

1st May: **WHITBY & DISTRICT A.S.** open show at the Spa Pavilion, Whitby. Schedules are available from Mr. G. Taylor, 28 Roswick Avenue, Whisby, North Yorkshire.

1st May: **STRETFORD & DISTRICT A.S.** open show at Humphrey Park Community Centre, Humphrey Lane, Stratford. Benching 12 noon to 2.00 p.m. Further information with s.a.s. to Mr. G. Horri, Show Secretary, 12 Kingswood Road, Motzton, Eccles, Manchester.

7th May: **NORTH AVON A.S.** open show. Not on 14th May as stated in the March issue of *The Aquarist*.

8th May: **L & E A.S.** show day at Monks Dyke High School. Benching 11.00 to 13.00; Judging 13.15. If any clubs have plaques or cups belonging to the Louth & District A.S. would they please return them to Secretary, T. Johnson, 17 Florence Waight Avenue, Louth, Lincs. LN11 8BE.

8th May: **BOURNEMOUTH A.S.** annual open show at Kinross Community Centre, Pelham Park, Kinross, Bournemouth. Show schedules available from 1st April from Show Secretary, Jack Jeffery, 13a Woodland Avenue, Bournemouth BH5 2DJ, Dorset. (S.a.s. would be appreciated).

8th May: **MAGGLESFIELD A.S.** are staging their annual open show.

8th May: **THROCKLEY A.S.** 4th open show at the Grange Centre, Throckley. Benching 11—1.15 p.m. Video film for children at 2.30 p.m. Schedules (s.a.s. please) from Show Secretary, Mrs. D. Lacey, St. Hwley Crescent, Throckley, Newcastle on Tyne NE15 9PX. (Tel: 0632 677236).

8th May: **LEAMINGTON & DISTRICT A.S.** Mal Show.

14th May: **SOUTHEND, LEIGH & D.A.S.** open show at St. Clements Hall, Leigh-on-Sea, Essex. Show Secretary, D. M. Cheswright, 2 Cedar Avenue, Wickford, Essex. (Tel: Wickford 2531).

14th May: **NORTH AVON A.S.** 4th open show, at the Church of the Good Shepherd, Church Hill, Kings Drive, Bishopston, Bristol. Further details from Show Secretary, Mrs. K. M. Gadd, 17, Beardon Avenue, Little Stoke, Bristol.

14th May: **ST. EDMUNDSBURY & DISTRICT A.S.** exhibition of furnished aquaria, show exhibits, club activities stand. Open to the public 11.00—3.00 p.m. at the Guildhall, Guildhall Street, Bury St. Edmunds.

15th May: **CORBY & DISTRICT A.S.** open show in the Festival Hall, Corby Civic Centre. Schedules from Alan Henderson, The Nook, Corby, Northants. Tel: Corby 05353 68269.

15th May: **BEDFORD & DISTRICT A.S.** 2nd open show at the Bunyan Centre, Mile Road, Bedford. Further details from Mick Dabwood, 27B, St. Michaels Road, Bedford.

15th May: **YORK AND DISTRICT A.S.** open show at Marston Livestock Centre, York (on York to Bridlington Road). Further details from Mr. M. Fawcett, Show Secretary, 16 Scarcroft Road, York YO2 1NF.

15th May: **BLACKBURN AQUARIST WATERLIFE SOCIETY** open show at the Windsor Hall, Blackburn. Any further details can be obtained from Mr. M. J. Parker (Public Relations Officer), 199 Hythe Close, Blackburn, Lancs.

21st May: **BRITISH MARINE AQUARISTS ASSOCIATION** Marine Seminar at the Dewsbury Club and Institute, Ouse Street, Dewsbury, commencing 10.00 a.m. Guest speakers include Dr. C. Andrews. For further details write to Mr. S. Preston, 14 Fountain Drive, Robensdown, Liversedge, West Yorkshire WF15 7PX, enclosing s.a.s.

22nd May: **ABERDARE A.S.** first open show at Aberaman Y.M.C.A., Cardiff Road, Aberaman, Aberdare. Benching between 9.30 a.m. and 12.00 p.m. For further details write to: Mr. T. Lily, 109 Dan-y-Hod, Pnyssau, Aberdare, or phone 06852 814649 or Mr. B. Rees 0685 877119.

22nd May: **ACCRINGTON & DISTRICT A.S.** open show at New Jerusalem Church Hall, Hargreaves Street, off Manchester Road, Accrington. Details from S. Walsh, 133, Lammack Road, Blackburn, Lancs.

22nd May: **WORKINGTON & DISTRICT A.S.** 4th open show at the Carnegie Arts Theatre, Workington at 2 p.m.

22nd May: **SUTTON & DISTRICT A.S.** open show at Sutton County Primary School. Further details from Mr. R. Hart, 22 Eastfield Place, Sutton-in-Craven, Nr. Knaresborough, West Yorks.

22nd May: **BRIGHTON & SOUTHERN A.S.** open show at Palmer High School (opposite Brighton University), Laines Road, Brighton. Further details can be obtained from the open show Secretary, C. A. Raggio, 90 Beverden Crescent, Brighton.

22nd May: **ABERDARE AQUARISTS' SOCIETY** open show.

28th May: **DROITWICH A.S.** first open show at the Salverpe Village Hall, Copcut Lane, Nr. Droitwich, Worcs. Benching 10.30 a.m. to 2.00 p.m. Schedules from Show Secretary, 47 Oakleigh Rd., Droitwich, Worcs. WF8 6JF.

28th May: **BRIDLINGTON & DISTRICT A.S.** open show at Hilderthorpe School, Bridlington. Show Schedules from T. Smith, 41 Hilderthorpe Road, Bridlington.

### JUNE

4th June: **SWINDON A.S.** open show at Park South Community Centre, Cranmore Avenue, Swindon. 1st place trophies as well as perpetual trophies. Show Secretary, Mr. C. E. Curtis, 78 Beech Avenue, Swindon, Wilt. (Tel: 0793 32920).

5th June 1983: **SUDBURY A.S.** 11th open show at Nessden High School, Quainton Street, Nessden, NW10. Further details from Barry Wateridge (tel: 01-850 6745).

5th June: The Norwich Section of the **BRITISH KOI KEEPERS' SOCIETY** monthly meeting in Norwich at the home of R. R. Beane. For further details contact the Secretary, Mrs. O. Crosby on Norwich 412095.

5th June: **ABERDARE A.S.** open show in the Community Centre, Marketgate, Arbroath.

Details from Show Manager, John Steen, 95 Brechin Road, Arbroath.

8th June: **MID-SUSSEX A.S.** open show, at Sidney West Sports Centre, Laylands Road, Burgess Hill, Sussex. Schedules from A. Paul, 7 Fairford Close, Outfall Road, Haywards Heath, Sussex. (01323 634492) F.B.A.S. Championship Class "R" (Platies).

8th June: **REDGAR A.S.** open show, Redcar Racecourse. Enquiries: Mr. Duffin, Telephone: Redcar 47836.

8th June: The **SOUTH EAST A.S.** are inviting you to come along to their Bring and Buy which is being held at the "Beveren", Hampton Football Grounds, Beaver Close, Station Road, Hampton, Middlesex, starting at 8 p.m.

11th June: **NAILSEA & DISTRICT A.S.** open show at the Clevedon Community Centre. Details from Show Secretary, Mr. M. J. Ellis, 3, Burrington Close, Nailsea, Bristol. (Tel: Nailsea 854158).

11th June: **LLANTWIT MAJOR A.S.** open show at the School Hall, Ham Lane, Llanywyt Major, South Glamorgan. Further details from the Secretary, Mr. J. Baker, 79 Rhubogwood, Ruckla, Bridgend, Mid. Glam. (Tel: Bridgend 68258).

12th June: **NORTHWICH & DISTRICT A.S.** open show at Hartford High School, Greenbank Lane, Cherry Road, Northwich, Cheshire. Details from Show Secretary, D. Valentine, 43, Hartford Road, Davenham, Northwich, Cheshire. (Tel: Northwich 6624).

12th June: **DUNMOW & DISTRICT A.S.** open show at the Foskes Hall, High Street, Dunmow, Essex.

18th June: **CORRINGHAM & DISTRICT A.S.** closed show, run in conjunction with a fishkeeping exhibition open to the public.

18th June: **EAST DULWICH A.S.** open show at Paisley Community Hall, Stogford Road, Walworth, London SE17. Enquiries to: Mrs. D. L. Windsor, Show Secretary, 32 Eddystone Road, Brockley, London SE14 2DE.

18th June: **BASINGSTOKE & DISTRICT A.S.** 25th open show at the Carnival Hall, Basingstoke. Schedules from Show Secretary, M. Strang, 10 Loddon Court, Neville Close, Basingstoke. (Tel: Bas. 67039).

18th June: **ALFRETON & DISTRICT A.S.** open show at Alfreton Hall, Alfreton, Derbyshire. For further details contact M. Darrington, 48 Pinnacle Avenue, Riddings, Derbyshire: (0773 662077).

25th June: **TONGHAM AQUARISTS** open show. For schedules and information contact Show Secretary, Mark Mitchell, 12 Ash Church Road, Ash, Aldenbury, Hants.

25th June: **PORT TALBOT & DISTRICT A.S.** 15th annual open show at the Talbach Youth Centre, Port Talbot. Details from John Egan, 47 Beverley Street, Port Talbot, West Glam., S. Wales SA13 1ER. (S.a.s. please).

26th June: **THE BRITISH KOI KEEPERS SOCIETY** 8th National Show—Koi '83, at Billing Aquadrome, Little Billing, Northampton, Northants, 11.00 a.m. till 5.00 p.m. Further details from: Show Secretary 85, Foston Street, Boston Lincs (Nr. Kettering), Northants.

28th June: **ST HELENS A.S.** annual open show, Rainhill Village, Rainhill, Nr. Liverpool. Further details from Mrs. H. Stradman, 10 Ribble Avenue, Rainhill, Liverpool L35 0NJ.

### JULY

3rd July: The Norwich Section of the **BRITISH KOI KEEPERS' SOCIETY** monthly meeting in Norwich at the home of Mr. D. Goose. For further details contact the Secretary, Mrs. O. Crosby on Norwich 412095.

3rd July: **CHARD & DISTRICT A.S.** open show at Furham School, Chard. Further details from D. Shepherd, 30 Ferton Road, Chard. (Tel: Chard 3985).

3rd July: **LYTHAM AQUARIST SOCIETY** annual open fish show at Ardsell Institute, Woodlands Road, Ardsell, Lytham St. Anne's, Lancs. Schedules available from Peter Hans, Show Secretary, 1 Wyndene Grove, Frockton, Preston, PR4 1DE. (Tel: Frockton 633142 or 635221).