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THE **AQUARIST**  
AND PONDKEEPER





# THE AQUARIST AND PONDKEEPER

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#### Our Cover:

Mr. R. Atherton who took both  
first and second place in the  
'Champion of Champions'  
contest, receiving his awards  
from George Cooke, President  
of the FNAS, during the 1979  
British Aquarist Festival.

The young lady featured on our  
September cover receiving  
award from Mr. Michael Fish  
was Miss Vicki Ann Moye, aged  
6 years, of Dunstable.

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The Editor accepts no responsibility for views expressed by contributors.

In common with the rest of industry, we have had to absorb vast increases in wages and other costs during the past twelve months. In view of this we are now forced to raise the price of 'The Aquarist' to 50p. However many innovations and improvements are planned for the near future ensuring that this magazine will remain the best value for money in the world of fishkeeping.



## OUR EXPERTS' ANSWERS TO YOUR QUERIES

### READERS' SERVICE

All queries **MUST** be accompanied by a stamped addressed envelope.

Letters should be addressed to Readers' Service, The Aquarist & Pondkeeper, The Butts, Brentford, Middlesex, TW8 8BN.

## TROPICAL QUERIES

by Jack Hems



*Hemigrammus caudovittatus*

**What is a Buenos Aires Tetra and is it, like most tetras, suitable for a tank set up for the display of decorative fishes?**

Buenos Aires Tetra is the popular name for *Hemigrammus caudovittatus*. The fish looks its best in a well-lighted and well-aerated tank kept clear of suspended sediment. It grows to about 2½ in. and swims to and fro in the middle and upper levels of the water. It is a shoaling fish and likes the company of several of its own kind. A temperature in the upper sixties to middle seventies (°F) suits it well. It sometimes develops two bad habits: nibbling at one's choicest plants and nipping at the fins of certain fishes. I repeat certain fishes because it is more likely to pick on species with sail-like or streamer-like fins than species with shorter fins such as the regular types of popular barbs. Some years' old specimens become rather aggressive. It has a life span of upwards of four years. It is worth inclusion in a community collection if young specimens are introduced to begin with and then left to grow up with companions who soon learn to keep clear of its artful nips. It is easy to feed on dried, live or flesh foods.

**Which in your opinion is the best and most easily obtainable and cultivated live food suited**

**to the smaller tropicals?**

I think that whiteworms are worth cultivating, for proper attention to the breeding box will ensure a constant supply of live food the year through. Plastic bowls are easier to manage, I believe, than shallow boxes of wood. Wood rots away and is more likely to encourage an invasion of other creatures such as tiny mites, spiders, and the rest. The plastic container should be filled nearly to the top with well-soaked sedge or moss peat. A good soaking removes excess acidity which inhibits a rapid spread of the worms. The culture medium must be kept habitually moist but not wet. Make a few shallow depressions in the surface of the peat and level off with a stodgy mixture of Farex and water or soya flour and water or a moistened dried cat's food. Cover with a sheet of glass and obscure all light with another cover of stout card, sacking or lino. If you leave this culture medium undisturbed for a week or so the worms (introduced at the same time as the food) will begin to breed. Introduce more food as the original dabs of food disappear. Do not take any whiteworms from the box or plastic container until a few weeks have passed. By this time, the box should house thousands if not millions of this valuable live food.

**Is the fish popularly known as the flying fox suitable for a community tank housing a collection of fishes about the same size as itself?**

The flying fox or pal is suitable for a community tank providing you bear in mind that it is given to sudden spells of boisterous activity dashing from one end of the tank to the other and then back again to its original position. This behaviour is apt to churn up settled sediment round the bases of plants and scare timid or delicately built fishes. Furthermore, it is best to keep only one flying fox in a tank, for two often fall out with each other and precipitate a lot of the bottom-stirring and rushing about. The larger

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the tank and the thicker the planting at each end the better.



*Rasbora borapetensis*

**I should very much like to set up a community tank of the smaller species of rasbora. Can you suggest a few suitable species to look for?**

Among the best are *R. maculata*, *R. borapetensis*, *R. dorsicellata*, *R. hengli*, *R. urophthalmus* and *R. waterfloris*.

**What information can you give me about a fish known to science as *Ctenopoma kingsleyae*?**

This interesting anabantid or labyrinth fish is native to West Africa. It is roughly elongated oval in shape and characterised by long-based dorsal and anal fins, a stocky peduncle and rounded caudal fin and comb-edged (ctenoid) scales. Coloration is greenish olive to clayey brown, with a large dark blotch in the posterior portion of the tail. It is a hardy fish that can survive for a time in foul water. It is certainly not put out by a certain lack of oxygen in the water. It is a predatory and aggressive species and is totally unsuited for the regular community tank. It is a good climber and its tank must be provided with a close fitting glass cover. It reaches a length of about 8 in. and demands food such as aquatic grubs, various worms, unwanted fry of tempting size. Temperature is not all that important provided it is kept at a range of about 68°F(20°C) and 77°F(25°C).

**How do tetras spawn?**

In general the readily obtainable tetras—the regular community tetras—from South America scatter adhesive or lightly adhesive eggs in thick tangles of feathery foliage. The bloated-sided females do this every so often as they are driven about the tank by excited and coloured-up males. After egg-laying is over, if not before if the fish appear to become more interested in nosing into the plants than proceeding with the chase, remove the parent fish to prevent cannibalism. Mass spawning, that is several lively males placed with several ripe females, often results in more fertile eggs and hatched fry. As a rule, a temperature in the middle seventies (°F) is advised.

November, 1979



*Osteochilus vittatus*

**Please give me some hints about keeping and feeding *Osteochilus vittatus*.**

This is an inoffensive species of cyprinid which does well in well-aerated water maintained at a temperature in the lower to middle seventies (°F). It readily accepts most live, flesh or dried foods and lives to a good age if provided with plenty of swimming space. Ordinary tapwater (mains) is quite suitable to keep it in good condition.

**Can you name the largest catfish found in freshwater?**

The European *Silurus glanis* attains a length of 10 to about 15 ft. There are one or two species from tropical America and S.E. Asia that grow nearly or about as large.

**When was the term 'aquarium' first used to describe a glass sided container specially made for keeping ornamental fish.**

In all probability the Victorian naturalist, Philip Henry Gosse, first used the word aquarium to describe a tank of captive fish. This about 1853. Vivarium, now used to denote an enclosure or case for reptiles and amphibians, was used by the ancient Romans to describe a place in which a variety of wild animals were kept. It follows that the term 'aquavivarium' was or is, applied to a case divided into two portions: one for amphibians, or some reptiles, to live most of the time on built-up areas with access to water for bathing, feeding or breeding.

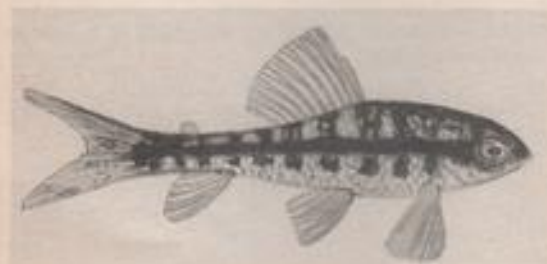
**Acting upon the advice of a friend, I encouraged the growth of floating plants in my aquarium in order to provide safe hiding places for livebearer fry. Just lately, however, I have been finding dead fish at all stages of growth caught in the vegetation just below water level. Please can you tell me what is going wrong?**

There is such a thing as permitting plants to overgrow a tank. That is permitting the plants to blanket the surface with a mat of vegetation inches thick. Grown or baby fish penetrating into these upper levels get trapped and, in trying to free themselves from their tangled mass of greenery, get so restricted in their

movements that they soon die. Another thing, a really dense coverlet of vegetation on the surface prevents the proper absorption of oxygen from the atmosphere and the escape of carbon dioxide gas from the water. Heavy plantings are of great importance for saving livebearer fry, but make certain that the fry have some clear areas to move about in, with access to safety in tangled growths if larger fish move in looking for trouble.

**I should like to know the best temperature for the neon tetra?**

The neon tetra, like the White Cloud Mountain minnow, is no lover of a protracted 'tropical temperature.' In the natural state both species inhabit rather cool waters, the latter tolerating the lowest temperature of the two. However, to get back to the neon tetra, a range of temperature in the upper sixties to low seventies appears to suit it best.



*Characidium fasciatum*

**I should be grateful for information on the country of origin, full size, and habits of *Characidium fasciatum*?**

This bottom-frequenting species is widespread over the Amazon and Orinoco river systems, and beyond, and attains a length of about 3 in. It requires a diet of small crustaceans, aquatic larvae, and worms. It is variable in coloration and irregular in the placing of horizontal and vertical markings.

**Can you recommend a species of *Cryptocoryne* that will grow tall enough to mask the rear glass of my 36 in. x 15 in. x 12 in. tank and yet prosper in a peat and grit planting medium receiving no more than 10 hours of fluorescent lighting (20 watts) a day?**

*Cryptocoryne balansae*, sometimes and erroneously listed as *C. somphongsi*, will suit the role. Alternatively *C. costata* or *C. tonkinensis* are worth looking for in the tanks of specialist dealers. *C. balansae* is usually available from a well-known grower of choice plants residing at Baunton, Gloucestershire.

**I have been told that it is incorrect to use the scientific name of *Tilapia mossambica* for the Mozambique mouthbrooder. In place of *T.***

***mossambica* the tropical aquarist should substitute the scientific name of *Sarotherodon mossambicum*. Is this true?**

It is true that *Sarotherodon mossambicum* has been put forward as a name change by certain ichthyologists. It seems, however, that it is quite in order to use the long-held name of *Tilapia mossambica* until the matter is properly sorted out and tied up by the museum people.

**I am a beginner in tropical fishkeeping and wonder whether you could put my mind at rest about the coloration of my angel fish and neon tetras. When I switch on the aquarium top light first thing in the morning in a curtain-darkened room, the colours of the fish are almost non-existent. Is this a natural phenomenon that can be easily explained, or is it a sign of some temporary malaise or advancing sickness?**

There is nothing to worry about. The pigment cells in the skin of your fish can expand or contract according to the quality or complete absence of light. Hence when the light is switched off and the room is plunged into complete darkness, their colours fade. Then, when the light is put on again in the morning, they assume, not immediately, but after a minute or two have passed, their normal daytime coloration.

**I should like to know the maximum size and general requirements (food and aquarium set up) of *Prochilodus taenirus*.**

This handsome fish from Amazonian waters is said to reach a length of about a foot in the wild. In the aquarium, however, it seldom exceeds more than about 7 in. A temperature range in the middle to lower eighties (°F) is recommended. The aquarium should be furnished with pieces of non-toxic dead wood (suitable waterlogged tree branches) and slabs of slate or granite to afford retiring places. It is very partial to greenfood, and regular aquarium plants come in for some persistent nibbling. It is hardly necessary to say then, that greenfood such as cooked spinach, turnip tops, scalded lettuce leaves, and the like, should be included in the normal diet of whiteworms, clean *Daphnia*, flake food, and minutely minced raw red meat.

**I should like to create a floating island of Java moss. Have you any idea how this could be achieved?**

Obtain a suitable piece of well-soaked cork bark and make a number of v-shaped notches round the margins. Then wedge tufts of the moss into the notches. In the course of time the moss will spread all over the surface of the bark, above and below, and make a most attractive decoration. Do not, however, position it under a very strong top light. Grow it on in partial shade to inhibit the development of algae.

## COLDWATER QUERIES

by Arthur Boarder

**I have a concrete pond, 8 x 4 x 3 ft., with four inch walls. The walls are a foot above the lawn. I now intend to double the size of the pond by cutting a gap, 3 x 1; ft., in one side and making another pond next to the old one. How can I make a seal at the join?**

As you probably realise, new concrete will not 'wed' with old and so you will have to make a seal at the join either with a sealant or a plastic sheet. There is a substance on the market for treating old cement so that a join is possible. This can be obtained from a builders' merchant. The alternative is to get a sheet of Butyl or similar substance, and fold it right over the join. If the underneath is treated with a good coating of a Bitumastic paint, it should make a good seal. Don't forget to remove all loose lime from the new part before using for fishes.

**I have a tank 24 x 10 x 10 inches with two Moors and two tritail goldfish in it. I have an aerator/filter but can only have it on for four hours a day. I have been told that the pump should be on all the time or it is no good. Is this correct?**

It depends how large your fishes are. The tank will hold about 8 inches of length of fish, excluding the tail. If there are no more than this, then no filter nor aerator should be necessary. A weekly servicing is enough, when some of the mulm is siphoned off from the bottom of the tank and a third of the water replaced with fresh. Continue to use aerator as before.

**I have a tank, 36 x 18 x 11 inches, with the following fishes in it. Four small Bitterling; 2 Moors; 2 Red Caps; 2 Goldfish; 2 Golden Orfe; 1 Shubunkin; 1 Comet and 1 Koi. One of the Red Caps seems unable to stay at the bottom after feeding but after a time it gets normal. Have I too many fishes in the tank?**

The sizes of the fishes in your tank will be the deciding factor as to whether it is over-stocked. If the tank is 36 x 18 inches surface area it will hold 27 inches of length of fish, excluding the tail. If it is 36 x 11 surface area it will only hold 16½ inches. Some fancy goldfish like the Orandas have trouble with feeding at times as their bodies are shortened. This means that the intestines are somewhat restricted and any food taken in will press on the swim bladder. Until this softens a little the fish may be in some

distress. Soak the food before feeding and the fish should be all right. Check up on the sizes of your fishes. The Orfe and Koi are more suitable for a pond as they soon grow too large for a tank like yours.

**I have a pond, 17 x 6 x 2 ft., with two water lilies and plenty of oxygenating plants. I have 20 fishes, goldfish and Orfe. My trouble is that the water is green although the fishes are healthy. What can I do?**

The green Algae is caused by too much light getting to the water. The Algae will only grow when there is plenty of light. Water plants usually keep this menace in check but you may not have enough underwater plants to choke out the Algae. The water lily leaves should give a lot of shade, as long as they are numerous enough. Do not feed too much with dried foods for a time and if you can get a good coating of Duck weed on the surface then this will soon clear the water of Algae. Once the water is clear the Duck weed can be flushed off with a hose.

**Which plants cause most Algae in the pond? I removed all the plants from the pond and used a pump, but three Koi died in two days. Do Koi need more oxygen than goldfish?**

You will not clear the water of Algae by removing the plants. Sufficient plants will choke out the Algae not encourage it. Koi and also Orfe require a good supply of oxygen and the larger the fish the sooner is it in trouble when the water lacks sufficient oxygen. See that you return enough water plants to the pond so that they may do their job.

**I have a 36 x 15 x 12 tank with only two moors in it, one 7 and the other 8 inches long. When I siphoned out the mulm from the bottom I examined the matter and found what I think are a lot of planarians. Will these do harm?**

The planarians are not likely to do any harm to your fish. These usually appear when over-feeding has taken place with dried foods. As these fish are rather large it is to be expected that their droppings are copious and so you may need to clean the base of the tank more often. Three or four drops of 5 per cent Methylene blue in the water will probably kill the planarians, and will not harm the fish.

**I have a pond, 8 x 8 x 1½ feet with goldfish**

and shubunkins in it. There are 9 goldfish at 3 in. and 4 shubunkins at 3 in. each. Several fish have been attacked by fin-rot and Fungus disease. I cannot find the reason. Can you help please?

I suspect that the water in the pond is not in good condition. You do not appear to have over-stocked with fishes as the pond should hold about 64 inches of fish. Goldfish have a mucus protective covering and as long as this is intact, the fish is able to resist the attacks by pests and diseases. Once a fish is out of sorts, usually because of foul water, the mucus covering becomes disturbed and the fish is then prey to diseases. The spores or germs of Fungus disease are present in most ponds but as long as the fish remain in good condition they repel the germs, etc. Clean out the pond and then go easy with the dried food. Most ponds, if set up correctly will function all right until the owner starts to throw food in every time the pond is visited. In a tank uneaten food may be seen but this is not likely in a pond. A feeding ring should always be used and if the smallest amount of food offered is not taken at once, no more should be given that day.

I have a pond which is about 160 square feet in surface area. I have a number of goldfish and Koi and one of the latter a fish of 10 in. long, has a hole on its back big enough to take a 5p piece. What is this and can it be cured?

It appears that the fish has Ulcer disease, which is the common name for this trouble. It is usually found in imported fish and is difficult to cure. This is because the trouble starts from within the fish. Unless the fish is too far gone, it may be possible to cure it. An antibiotic should be introduced with its food. If Chloromycetin can be injected into garden worms and these are fed to the fish, this may start a cure. Then the sore can be treated as follows:— Hold the fish in a wet cloth and carefully wipe the sore as dry as possible. Then dab it with neat T.C.P. Then smear a thin coating of Vaseline on the wound and return the fish to a tank. It may take some time to effect a cure but the treatment can be repeated daily for a time. I am not certain that this will bring about a cure but if the fish is not treated in some way it will die and so the suggested experiment may help.

I have lost about fifty goldfish from my pond this spring, although they all survived the bad winter. The fish show no signs of disease or injury. I have large clumps of bull rush and King cup in the pond and have had some ivy hanging into the pond. Can you give a reason why the fish died?

The ivy may have poisoned the water or the pond may not have been cleaned out last autumn. In the latter case there would be a quantity of decaying

matter on the bottom and the foul gases from this would not be able to escape from under the ice.

The water would then become foul and as it warmed up in the spring, the water would hold less oxygen and so the fishes would be killed.

We have a garden pond with a number of large goldfish in it but for the past three weeks we have hardly seen a fish. They appear to be hidden in the oxygenating plants and do not come out even to feed. A short time ago they spawned and we have seen some tiny fish. Do you think the older fishes are dead?

If the fishes had died it is almost certain that some would have floated to the surface. After spawning most fishes are exhausted and will rest for a time to recover their strength. Go to the pond at night with a torch and you may see the fishes on the move. Do not feed until they are active again and then just try a little brown bread crust on the top of the water. If no fish take it fairly quickly do not give any more food for a day or two. It is quite probable that the fish will soon come out again and then you can give them some garden worms to help build them up again.

I have a garden pond constructed with a plastic liner with concrete slabs around it. There is a privet hedge close by. I cannot keep goldfish alive for more than a few days although I have tried several times. The fish soon lose their balance and die. Can you give a reason?

Obviously the water is poisoned by something and as you have kept fishes in tanks it is not that the water comes through copper piping. There are two possibilities for the foul state of the water. Leaves could have fallen into the water from the privet hedge and polluted the water or free lime could have come from the concrete slabs when it rained. Over-feeding with dried foods could also cause trouble. Check up on the points mentioned and you may find that which is wrong.

I have noticed some bubbles on the top of the water in my coldwater tank each morning. I have a number of goldfish but I do not think that I am over-stocking. What is the reason for these bubbles?

The bubbles on the surface are a sign that the water does not contain enough oxygen and so the fish have been mouthing at the surface for air. There may be many water plants in the tank and although they give off oxygen during the hours of day-light they give off carbon dioxide at night. The water then does not contain enough oxygen during the early hours. An aerator should be used in a tank at night in preference to during the hours of daylight. See that the water is pure and that it is not over-stocked with either plants or fishes.

## KOI QUERIES

**As I believe that coldwater fish (in ponds) should not be fed after about the end of October, I should be pleased if you could tell me the best foods to give before then.**

It is wrong to look at the calendar and decide that then is the time to stop feeding your Koi. Goldfish may be able to find sufficient food throughout the winter in well-planted ponds but this is hardly likely to apply to Koi. Their large size and scavenging habits in less well-planted ponds mean that little escapes them to survive the winter and provide food. Quite apart from that aspect, who are we to decide which day is their last to be fed that year? Pond fish take their body temperature and thereby their level of activity, appetite etc. from their surrounding environment which is the pond water. This can easily be as warm at the end of a mild October as during the middle of a cold June. This should be the deciding factor on whether to reduce feeding. There is no month of the year where I could dogmatically say that Koi should not be fed. Obviously, during severe frosty weather when in a state of more or less torpor, Koi will not feed and no food should be offered.

As a general rule, it is safe to say that Koi will feed to some extent down to a water temperature of 45°F. (7°-8°C). Personal observation and a reliable thermometer will help beginners to decide if their Koi might feed. Old hands, (with "wet thumbs") will know.

At cooler temperatures, food that sinks is best and included should be earthworms, wholemeal bread paste, boiled rice or wheat, mashed vegetables etc. Protein should be reduced during winter. No food must be left uneaten, this will only rot and produce unhealthy bacteria. Koi should be fed well during the autumn to sustain them in good condition during periods of inevitable severe weather to come. Last winter was exceptional (and not to be repeated I hope) but Koi-keepers should allow Koi to decide if and when they want to feed and be on hand to offer a little food, according to weather conditions, appetite, activity etc.

**When is the best time to clean out a pond, is it Autumn or Spring?**

I would hope that Koi ponds are not allowed to become excessively dirty at any time because dirty conditions are unhealthy and mostly mean that Koi are not seen at their best as they are in cleaner conditions.

Certainly ponds should be made as clean as possible during Autumn so that the Koi will overwinter safely.

by Hilda Allen

Water-lily leaves and flowers should be removed as they fade and all rotting debris, leaves, excreta etc. should be cleared. A net stretched over the pond will prevent leaves falling into the water and every effort should be made to provide a healthy environment. Filters should be kept in operation and water changing continued, albeit at a reduced rate through the colder months. May is the best month for planting or dividing water lilies etc. and then also, any accumulated mulm and debris should be removed.

**I have a water pump rated at about 2,000 gallons per hour which may be too powerful for my filter bed of 75 square feet do you think? The water return into the pond seems to annoy my neighbours, especially at night, and I have now fitted a gate-valve to reduce the outlet flow (and noise.) This appears to have solved the problem but I would like to know if it is a good idea?**

It is only possible to give a mixed answer as obviously it would have been better and more economical from an overall cost of installation and operating point of view to have bought a pump rated at about 1,000 gallons per hour. Allowing for moderate friction losses in the pipework and filter bed this would have provided an adequate flow rate for the area quoted.

Water pumps of the capacities in question and driven by electric induction motors normally run at a constant speed of about 2,850 revs per minute and with no means of varying their speed. The only method of controlling the flow is to restrict the water outlet or, as in fact you are doing, by fitting a gate-valve which is infinitely variable.

Alternatively, you could study the different impellers fitted in the range of water pumps and either fit the next size down, or dependent on the type of impeller, to experiment with a spare by reducing the width of the vanes or diameter until the required maximum output is attained. Some efficiency may be lost, but with the motor not wasting so much power you will save on your electricity bills.

You can still use the gate valve to reduce the flow at night, or lower the outfall of water to reduce the noise. During winter it would be safe to direct the flow either at, or just below the water surface but it is most important to retain some aeration particularly through the summer and autumn. If a short length of  $\frac{1}{2}$  or  $\frac{3}{4}$  inch vertical pipe is fitted into the top of the water-return pipe, about 6 inches from the end, a lot of air will be drawn into the water.



There are other ways of inducing air into the water such as by enclosing the return pipe a little above water level inside a slightly larger diameter pipe just dipping into the pond. I hope you will find one of these ideas will keep both your Koi and your neighbours happy.

**If I fit an adequate under-gravel filtration unit in my pond, will this be sufficient to keep my pond clean without any extra work involved?**

A great deal will depend upon the number and sizes of your Koi and the restrictions of the pond, but I am afraid I cannot promise you a work-free future. Sensible under-gravel filtration should provide your Koi with water of an acceptably healthy quality, and you with an opportunity to see them at their best; but only if other cleaning-out procedures are undertaken according to all the other factors involved.

(I really do have to struggle to answer some of the queries). It is not easy to explain all about keeping Koi in a few paragraphs but it is essential I think to understand and accept certain basic principles. There really is no mystique in keeping Koi, being carp they are naturally lively, robust fish when in good health. Problems arise when they are misunderstood or their requirements underestimated. All too often ponds are grossly over-stocked (a) in the beginning or (b) later, when owners decide that the first half dozen small ones are doing alright so why not have a dozen and double the pleasure or (c) by foolishly introducing large Koi into small ponds in which they would never have grown to their present size.

Although water filtration is advised, it is also necessary to keep conditions as clean as is practicable.

Those familiar with the task of cleaning out goldfish ponds will be aware of the amount of what is politely called "settled mulm." Koi ponds are likely to produce a lot more mulm, which will be a lot less settled, due to the Koi's natural habit of sifting through everything in search of food.

Under-gravel filters should be sited in the shallower parts of ponds, those situated in the deeper areas will collect a great deal of mulm to overburden and possibly clog the filters. Bottom drainage, syphoning-out or vacuuming will remove the worst of the waste-products, debris etc. into a conveniently situated soak away.

Certainly by October or November Koi-ponds should be as clean as possible to allow the Koi to overwinter in good conditions with the minimum of disturbance at cold temperatures.

**I would like some advice regarding the type and size of pump for an under-gravel filtration system I am about to instal. My pond is 44 feet by 22 feet and 18 inches to 3 feet deep.**

**The pond is stocked with Koi, but I can transfer these while the work is carried out. Would it be alright to make the alternations between October and Christmas and is it an advantage to connect a fountain to the water outlet of the pump?**

There are not many ponds as large as yours nor holding so much water and you may have a problem in coping with some 13,000 gallons of water.

For use throughout the year you will need a pump which, allowing for friction losses in the filter and pipework system, should return some 1,500-2,000 gallons per hour and I have sent details of a suitable pump.

How far your pond will be affected by the growth of microscopic suspended algae, with which all Koi-ponds are plagued in Summer, is not known as this is determined by many factors such as the location of the pond to receive sunshine, shade provided, numbers and size of Koi etc.

It is almost certain that you would require a second pump for intermittent use and I would suggest identical pumps for ease of change-over when necessary for service or in emergency.

You could also consider an entirely separate high-flow rapid sand filter system for use a few hours per day or as proved necessary in high summer. This would give you a rapid mechanical filter to clean the water and the under-gravel system will provide a permanent biological filter to purify the water.

Any alternations can be undertaken between October and Christmas as the accommodation of your Koi during this cooler period is unlikely to produce some of the pollution problems that might happen in Summer. Some spells of bad weather may occur and I trust that a small pump will be in use to keep the water circulating to maintain an adequate oxygen content and an area free of ice if necessary. A close watch should be kept on water conditions if the temporary quarters may be overstocked, and perhaps some water may have to be changed from time to time.

A fountain (or waterfall) is a good idea during Summer, especially on warm, close nights but they may unnecessarily cool the water during severe frosts. For Winter use the water return can by-pass any fountain or waterfall and be directed at the water surface or even below. The turbulence created will effectively provide sufficient oxygen during Winter and keep open a hole in any ice.

Whilst your pond is empty you may consider the installation of one or more bottom drains if you do not already have these. They are available for both concrete and liner ponds and are used in swimming pools.

Best wishes for success and good weather in your attempts to provide first class conditions for your Koi.



# MARINE QUERIES

by Graham F. Cox

## READERS' SERVICE

All queries **MUST** be accompanied by a stamped addressed envelope.

Letters should be addressed to Readers' Service, The Aquarist & Pondkeeper, The Butts, Brentford, Middlesex, TW8 8BN.

I intend to change my freshwater aquarium to marines. My tank is 36 in. x 12 in. x 15 in. and is all glass. Is this too small to be kept without too many problems? My filtration consists of 2 U/Gs and an airstone powered by a Rena 301, then an Eheim 2010 external power filter. Are these adequate? Lighting would consist of one Gro-lux (20 watt), one Northlight (20 watt). Is this alright? (I'm not considering keeping invertebrates).

I would like to start off with a *Pterois volitans*, then after I've gained some experience, add a Copper-band Butterfly and perhaps a Regal Tang or a Yellow Longnose Butterfly. Would these fish mix peaceably and would they provide any feeding problems, etc.? I was thinking of feeding frozen Brine Shrimp, Blood-worm, *Daphnia* and also bits of prawn, a vegetable flake diet and live *Daphnia*. Is this the right sort of food for these fish?

As I gain more experience I intend to purchase a bigger tank (4 ft.), but I cannot think of a way of using the materials from my first tank to put in the second tank without sacrificing the fish in the first tank; it seems to me that I would either have to have the new tank with newly purchased sand, U/G filters, etc., thus leaving surplus from the first tank, or I would have to purchase a third temporary small tank. Any ideas?

Can you see any major drawbacks of the system I intend to employ and are there any magazines on sale in Britain concentrating solely on marines?

Finally, would I be able to keep a 48 in. x 15 in. x 15 in. tank in my bedroom or would it be too heavy?

I have always considered the 36 in. x 12 in. x 15 in. (gross gallonage = 23 gallons; 100 litres) tank as being the smallest practical size in which to make a first attempt at keeping a sea aquarium.

Your filtration/aeration proposals sound very business like. My only recommendation would be that you include as much ultra-high-activity marine charcoal in the Eheim as possible. This type of charcoal offers the only sensible way of keeping the concentration of large-molecule, toxic organics which nitrifying bacteria cannot deal with at satisfactorily low levels of concentration. But for your having a powerfilter as well as U/G filtration, I would also suggest two air pumps.

Your proposed lighting level is quite satisfactory in view of your current lack of interest in invertebrates.

Once you have satisfactorily matured the aquarium's filtration system (i.e., until no trace of pinkness appears in the nitrite test kit phial after 45 seconds), you should add the smallest *Pterois volitans* (common lionfish) you can find, e.g., no more than 2 in. overall body length, but the smaller the better. Be content to look after this one fish satisfactorily for the 6-8 weeks during which you acquire marine "fish-fingers" and the total maturation of the filtration system is secured. After this you should buy a small Yellow Longnose Butterfly (*Forcipiger longirostris*) rather than the Copper band Butterfly (*Chelmon rostratus*) since the latter butterfly fish is inclined to be rather a difficult subject for beginners. Your final purchase would be a juvenile (i.e., max. length tip-of-nose to tip-of-tail = 1½ in.) Regal Tang (*Paracanthurus hepatus*).

All of these fishes will feed satisfactorily on any gamma-ray irradiated seafoods except the lionfish which may have to be tempted initially with ¼ in. long lengths of live earthworm, which must be re-

moved from the aquarium within 5 minutes of non-acceptance. Be extremely careful in your usage of all live foods, *except* earthworms and whiteworms. Very often these live foods introduce a great number of parasites/pathogens into the aquarium which will later require expensive or inconvenient medication to correct.

Changing over tanks without losing fishes or invertebrates is quite simple really. You should proceed as follows:

Set up the new 48 in. x 15 in. x 15 in. (~38 gallons or 170 litres) tank and stand in your bedroom in such a way that the stand's feet are standing on joists **NOT** floorboards. Now add a 20 gallon pack of artificial sea salt to the tank and run in 18 gallons of cold tapwater. Couple up an airstone (wood or pumice) to a spare air-pump and fiercely aerate this water for 6-12 hours until *all* the crystalline salt is dissolved. Then add the trace elements from the bottle provided with the salt and aerate for a further 12 hours. This will give you a seawater of precisely the correct life-supportive chemistry but having too high a specific gravity and too low a temperature for tropical marine-life. You will probably find that, after 24 hours of seawater *chemical* maturation discussed above, you have a water temperature of 60°F. at an SG of 1.023 to 1.024. You should now add two gallons of **WARM** (but not boiling) *tapwater*, at say 120-130°F., which will simultaneously bring the seawater's temperature up to 75-78°F. and reduce its S.G. to 1.018-1.020. Now net your fishes and invertebrates (if any) into a couple of plastic buckets of seawater siphoned from the old tank. Remove all rocks, shells and living rock, etc. into a third, dry plastic bucket. You must now

get rid of as much of the accumulated sea-humus from the old tank's filter-bed as possible by vigorously stirring up the filter bed into the remaining seawater, allowing the denser cockle-shell/coral sand to settle to the bottom and then quickly siphoning off the tired old seawater and suspended sea humus to waste.

Going back to the new tank, position the new U/G filter-plate (s), connect up the air pumps to the airlifts and pour enough previously bleached and washed cockle-shell onto the filter plates to give a 1 in.-2 in. depth overall. Now remove all the old, well matured cockle-shell/coral sand from the old tank to the new one; add also the rocks/corals/shells/living rock from the old tank to the new 48 in. aquarium. Making one last check that the S.G./pH/temp. of the old seawater in the buckets that the fishes/inverts/plants are in are roughly the same as the comparable parameters in the new aquarium, float these buckets in the new tank for 20-30 minutes while you stand by, adding a cupful of the new seawater to the floating buckets every 1-2 minutes. Now set the creatures free by gently tipping them and their water into the tank and allowing the fishes to swim out in their own time. The invertebrates and algae should also be newly sited at this time and the buckets withdrawn. **N.B.—If you have not already remembered to wire up your heater/thermostat in the new aquarium, do so now immediately.**

Sadly, I don't think there is a commercially-produced magazine dealing exclusively with marine life currently available in the U.K. There is however, the excellent journal produced by the British Marine Aquarists' Association and distributed to members FOC.



#### ADVANCE NOTICE

#### THE FEDERATION OF NORTHERN AQUARIUM SOCIETIES

Members of The Confederation of United Kingdom Aquarists

in collaboration with

#### THE AQUARIST AND PONDKEEPER

present

### THE 29th BRITISH AQUARISTS' FESTIVAL

at

BELLE VUE MANCHESTER

on

SATURDAY and SUNDAY 8th 9th NOVEMBER 1980

# From a Naturalist's Notebook

by Eric Hardy

FEW AQUARISTS heard of the Water Group in the Council for Nature, or the Council itself, for though it imported from North America the ideas of Nature Week and nature-trails, its impact on British natural history was so limited that its forthcoming demise was no great surprise. Recently I sat on its natural history societies' committee in London to formulate its last rites. Nearly 21 years ago it began as a federation of over 300 regional amateur and national professional societies, but attracted only a handful of aquarists. (I was astonished when a British Herpetological Society rep. once scorned you as mere "fish-exhibitors"!). The termination of Government grants, which formed two-thirds of its budget, has brought its dissolution. It is handing over its work to the Committee for Environmental Conservation, which equally few aquarists have heard of.

## Grant Cuts

The curb on research grants is likely to end a few "feather-beds". I have just received from the Government's National Environmental Research Council the 64-page report on its grants last year. Some are very serious, but expensive investigations. A Liverpool University professor is just finishing a £13,194 attempt to find why marine fungi don't grow in freshwater. In December, an Aberdeen zoologist finishes a £9,100 study of the growth, feeding and reproduction of the common octopus and another there is on a £6,865 satellite-tracking of basking sharks. It cost £28,785 for less than 3 year's study of the influence of the environment on the respiration of fish and £18,266 for a Liverpool man's 4 years' study of water-weeds recovering from pollution in a local canal. £21,397 goes to a 3 year's study of crayfish populations from Durham and £15,353 for 3 year's work by an Aberdeen zoologist on the declining, over-fished freshwater pearl-mussel, *margaritifera*, which can live 100 years. So we go on: £34,452 for 3 years for a Stirling professor's study by ultrasonic telemetry of lake-dwelling brown trout, and respiration of crabs, using special transmitting tags and receivers. One would assume that enough work had been done on feeding pike in Lake Windermere, but £15,056 goes to a Leicester zoologist's further studies, observing vision,

smell and the lateral line in pike trained to expect certain prey sizes.

Surgical and chemical experiments to alter the natural spawning time of rainbow trout, altering light and temperature too, a 3 year project by an Aston biologist, will cost £18,203. Add to this £8,040 to study the vision of trout, £17,583 for protein-metabolism in fish, £11,135 on the feeding of *Daphnia*, £8,137 to find how water hog-lice tolerate lead and copper, £15,014 for conservation studies at Southampton on our relict sand-lizard colonies and £12,582 on the ecology of Aldabra's giant tortoises and you will see how expensive is professional natural history. As much again was spent by the government for research vessels, equipment, etc., as well as these direct grants. However, interdepartmental strife arose in August when the Council for Nature opposed the MAFF grant to drain West Sedgemoor, one of the last major haunts of semi-aquatic plants and birds on the Somerset Levels. The other month I mentioned how little is known on the non-biting Chironomid midges. A Bristol University man has been granted £20,393 for a 3 years' revision of the classification of the 17 British species of the genus *Chironomus*, which include the angler's plumed or golden dun midge, whose larva is the bloodworm. Altogether we have 450 *Chironomidae* and few biologists identify beyond family or genus.

Publications of the Government's Institute of Terrestrial Ecology (68 Hills Road, Cambridge) are outstanding for clarity, authority, illustration and up to date presentation, well meriting the money spent on them. For example, Dr. P. S. Maitland's 76 page *Checklist of Animals Occurring in Fresh Water in the British Isles* (£1.50) lists over 3,800 species from sponges to mammals (but excluding Protozoa) all with code numbers tracing back classification, references, and numbers in the groups. Thus we have 51 fishes living in over 5,600 lakes, plus rivers. Biggest species lists are 1,138 aquatic Diptera, true two-winged flies, 511 microscopic rotifers, 450 Chironomid midges, 322 Hydracarina (water-mites, etc.), 300 aquatic beetles. They also produced a very good illustrated *Beginner's Guide to Freshwater Algae* by Hilary Belcher and Erica Swale (HMSO 85p) which selects 110 of the commonest genera, with a species from each.

It is presently studying the dramatic die-back of many beds of reedmace, *Phragmites*, in Norfolk, at Hoveton Great Broad, the Bure and Ant Broads, presumably influenced by increased sediment and the depths of soft mud. Projects are also surveying Shetland's and Yorkshire's freshwater life; the predation on freshwater animal-plankton; and classification of freshwater flagellates as well as our old friends the amoebae.

After the first frosts, look at newly-planted bog-primulas in case any squeezed up by the cold want treading-in, for this takes greater toll of them than anything else. In sheltered waters you may still see yellow flag-iris, monkey-musk, *Cotula* and celery-leaved buttercup in flower and the last of the dragonflies, the red darter *Sympetrum* over pool or stream. Until frosts strike low-lying water-gardens, autumn is a season of great beauty from tiny surface water-ferns (*Azolla*) to waterside swamp-cypress in brief resurrections of summer. Practically all the top-growth of *Primula denticulata* will disappear, and it can be dressed with leaf-mould or peat, free from fertiliser or lime. Their stocks are increased by root-division, especially if you grow varieties like Pritchard's Ruby.

#### Autumn

Bog-arum's crimson berries are now very useful in floral arrangements while portions of its creeping root-stock can now be inserted in boggy or muddy soil for propagation. After flowering, American loosestrife, *Lysimachia terrestris*, produces red bulbils in the axils of its leaves and these elongate and brown later. Much of the trouble of raking out dead leaves from the garden fish-pool can be avoided by covering it with cheap chicken-wire before leaf-fall.

Winter buds of bladderwort, frogbit and water-violet, falling now to the bottom, can be retrieved for propagation. Most aquatic plants should not be disturbed during their autumn and winter rest. Among exceptions, the creeping rhizomes of North America pickerel-weed, *Pontederia cordata*, are easily established in 3 to 10 ins of water to produce their little clustering funnel-shaped pale violet flowers next autumn, where it is hardy enough for the winter. Its decorative foliage died down in September. Its rhizomes are increased by division in autumn or spring, pegged down to keep fish from disturbing them. Its close relative, larger and notorious water-hyacinth, *Eichhornia crassipes*, is usually grown here as a greenhouse plant; but it may be planted out in 8 ins of water in June, and now brought indoors to winter at 45°F. Its shiny green leaves have curiously inflated stalks, causing the plant to float and send down masses of hairy roots to reach the bottom, and at the same time provide spawning material for fish.

#### Pondside Gardening

After waterside *Astilbes* die down, remove rooted  
November, 1979

offsets from outside the clump and replant in humus in a new site; then, in spring, top-dress with leaf-mould and old manure. Before planting waterside azaleas dig in leaf-mould and grit if the soil is heavy, choosing a rockery facing west to avoid damage by spring frosts or strong summer sunshine. Many poolside plants like bogbean, creeping jenny, arrowhead, water-soldier and both purple and yellow loosestrifes (which are unrelated) may need cutting back well if they are not to grow out of control. We admire kingcups in May, but plant them now under a few inches of water. They luxuriate in part shade and are highly polymorphic. Huge, deeply-coloured double flowers are borne by *Caltha palustris monstrosus plena*. With plenty of room, oriental *polypetala* spreads its large, showy 2-3 ins blooms as the best of all, followed by leaves 5 or 6 ins broad. Its hybrid with our native plant retains the latter's more compact growth. In contrast are the dwarfs I have seen still flowering in mild November or January: *nana plena* and *nana semiplena*, also *C. hortulanus* and white-flowered *rotundifolia* and *leptosepala*.

The only good waterside conifer, slow-growing swamp-cypress, *Taxodium distichum*, can be planted now, or cuttings struck and kept moist in a shaded frame. Pyramidal when young, broad and cedar-like when mature, this beautiful Florida streamside tree has a pendulous form and belongs to large gardens. Fresh green yew-like spring foliage is offset by reddish-brown bark. In age, its hollow roots protrude 3 feet above ground like unsightly knobby knees. It has strange aerial breathing roots too. It isn't happy in limy soil, but otherwise attains 16 feet in 10 years, spreading 8 feet, and may go on to 70 or 100 feet. Seeds from its small, round, purplish cones may be germinated in a cold frame in April, potted up and planted out 2 years later. Branches may be layered in spring, if any are low enough. In contrast, *Salix* cuttings will make a screen in 3 years.

#### Bog Draining

Damp, boggy primula beds should not lie waterlogged all winter, or their Asiatic occupants will not get the rest they naturally enjoy beneath their native Chinese, Burmese and Tibetan snows. Such sites should be trenched and drained to allow surplus water to soak away, preventing their soil from becoming sour and stagnant. Let it lie to sweeten before planting, then plant candelabra and *sikkimensis* primulas in large groups. Never, of course, plant alpine or saxatile primulas here. The most difficult of moisture-demanding primulas, *littoniana*, which resembles a miniature "red hot poker" sets so little seed that it is worth persevering with it in shaded leaf-mould. Then in early summer it may reward you with a bright red flower-spike which turns a mixture with violet. The first winter frost usually wipes out primulas grown soft and juicy from using fertilisers or manure.

# NEWS FROM FEDERATIONS



FOLLOWING the recent death of Hugh Parrish, the post of FBAS General Secretary has been temporarily filled by Trevor Butler, who has been co-opted on to the FBAS Council for this purpose. All correspondence to the FBAS should now be addressed to: *T. Butler, 17 Risborough Road, Maidenhead, Berkshire.* Societies are asked to bear with any slightly longer than normal delays in receiving replies until things get back to normal.

Two recent FBAS publications are *Booklet No. 6—National Shote Fish Sizes* (which has now been completely revised and metricated) and *Booklet No. 7—Society Programme Aids* a revised edition, which includes many sources of film and Tape/Slide programmes of interest to hard-pressed Society Secretaries. Both publications may be purchased from the FBAS Publications Officer, Sybil Hedges, 150 Ashburton Avenue, Seven Kings, Ilford, Essex, the prices are £1.25 for Booklet No. 6 and 10p for Booklet

No. 7, but please enclose a strong, stamped, self-addressed envelope—particularly if ordering No. 6 as the postage on this book alone is 20p.

New FBAS AquaTalks include *Cichlids of West Africa & Lake Tanganyika*, (No. 33) *Cichlids of Lake Malawi* (No. 34), both by Ian Sellick of the B.C.A., and *The World of Corydoras* (No. 35) by David Sands. Please note that all new titles in the AquaTalk series are produced on cassette form only, and as from January 1980 existing programmes on reel-to-reel format will be withdrawn. Programmes may be booked through W. R. Dale, 14 Rutland Road, Wanstead, London E11.

*Ties & Badges* Officer, Pete Cottle announces a change of address; it is now 'Monkstone,' Whitchill Road, Meopham, nr Gravesend, Kent.

Congratulations are due to Mrs. May Nethersell of Riverside A.S. in gaining a FBAS Gold Brooch and Andrew Feast of Tonbridge A.S. for a Silver Brooch in the FBAS Brooch scheme (open to all aquarists exhibiting at FBAS sponsored Shows). Ron Atherton, Hartlepool A.S. gained First and Second places in the 'Champion of Champions' at the British Aquarists Festival at Belle Vue, Manchester.

A reminder is given in respect of the FBAS Annual General Meeting, which will be held at Conway Hall, Red Lion Square, London W.C.2 on Saturday, 1st December, 1979.

Dick Mills.



## F.N.A.S. Breeders' Award Scheme

ARE YOU a member of a Federation of Northern Aquarium Societies affiliated Society? Are you interested in breeding aquarium fish? If so, then the new F.N.A.S. Breeders' Award Scheme starting 1st January, 1980 is just the thing for you.

The new scheme, designed to encourage the breeding of aquarium fish by F.N.A.S. members, replaces the previous scheme which never got off the ground and will, it is hoped, cater for the aquarist who would rather breed fish than show them.

Although controlled by the F.N.A.S., the Breeders' Award Scheme will, in the main, be run by the member societies enabling them not only to share the total work load, but also to participate more closely in F.N.A.S. organised events.

Four grades make up the scheme with the first

three carried out and verified at Society level, while the fourth grade, the Master Breeder, requires fish to be exhibited in breeders' teams at F.N.A.S. member society open shows.

To graduate through the first three grades participants are required to successfully spawn and rear fifteen (15) species of fish (5 species for each grade). The species of fish eligible for each grade will depend upon how difficult each species is to breed. Those easiest to breed will be eligible for Grade 1, those a little harder for Grade 2, and the most difficult for Grade 3. In order to show his or her all-round ability the participant must include among the 15 species bred, fish from five of the following eight families: 1, Livebearers; 2, Anabantids; 3, Cichlids; 4, Killifish; 5, Characins; 6, Barbs; 7, Rasboras, Danios and Minnows; 8, A.O.V.

In order to get Grade 4, the "Master Breeder Award," five different species bred by the participant must be exhibited as breeders' teams at Member Society open shows where each exhibit must reach

a minimum standard of 55 points plus difficulty of breeding points for that species.

Any species is eligible including those bred for the lower grades and they can be exhibited at any time during or after the period that the participant is working for Grades 1 to 3. Participants may work towards one or more grades at the same time but will not be eligible for the higher grade until all the

requirements of the lower grades have been met.

It is hoped that full details of the scheme will be made available to every member society before the end of the year, but in the event of any member society not receiving notification then full details will be available from the F.N.A.S. Controlling Officer: Mr. L. Bradley, 4 Ash Road, Sandiway, Northwich, Cheshire.

## THE REED FISH

by Peter J. Graham (aged 14 years)

THE REED FISH is a relatively rarely-seen tropical fish originating from parts of Africa (Niger delta, Lulabar coast, and Camaroun). Lengthwise, it is a large fish, growing anything up to 3 ft. (90 cm.). It is, however, very thin, which, combined with its colour, gives it the appearance of a snake. Indeed, another of its common names is the Snake Fish.

Its scientific name seems to be in some dispute, usually being given as *Erpetoichthys calabaricus*, but sometimes as *Calamoichthys calabaricus*.

The Reed fish is the only member of its genus, and belongs to the family *Polypteridae*. Other members of this genus are also kept in aquaria, notably the bichirs of the genus *Polypterus*, these differing from the Reed fish in that they are generally nocturnal, predatory, and very aggressive to certain other fishes. They are also usually much more expensive than the Reed fish, which, incidentally, are usually priced at just under £1.00 for 12 in. (30 cm.) specimens.

As regards colour, the Reed fish is dark, chocolate-brown on its back, shading to coffee further down and finally to a beautiful bright orange beneath. Fins are dark brown or, in the case of the pectorals, clear tipped with chocolate and then orange. Because of its scales, which leave slight "dips" or "furrows" between them, its back and underside have the appearance of being diamond-patterned. Caudal and anal fins are fused together at the base, but later on separate. The dorsal "fin" is separated into 11-14 "finlets," which are usually kept lowered, but are, on occasion, raised, providing an imposing spectacle. The head is flat, looking almost like a continuation of the body. Gills are tiny, behind which are the relatively large, crystal-clear (apart from the tips) pectoral fins, which continually beat briskly to and fro. The eyes are very small and glassy, and the mouth is very large. At the end of the "snout" are two long tubular nostrils, which are easily damaged.

When it swims about, it looks exactly like a snake, with its large mouth, tiny eyes and sinewy movement.

Unlike many members of the family this species is

not totally nocturnal. While more active at night than at day, it certainly does not hide amongst plants and rocks all day, as some books claim. It is often to be seen snaking around the tank in full daylight.

It is at night, however, when it is most active. Often you may hear a casual backlash of its tail as it slams the hood of the tank. The main disadvantage of the fish is its desire to escape from the aquarium. I have had to place weights on the part of the hood which is hinged, to prevent my specimen from escaping after I saw it push the lid upwards with its snout. The best thing you could do to safeguard this from happening is to have a weighted, tight fitting cover and/or a lower water level.

Feeding the Reed Fish sometimes presents some difficulties. For weeks after its introduction into the tank my specimen ate nothing (except two small guppies and half-a-dozen small sailfin mollies that I had been attempting to raise). After two weeks, when I grew very anxious about its welfare, I eventually hit on the thing that triggered off its feeding mechanism. A piece of meat, or better still an earthworm, speared on a knitting needle and placed before it would usually do the trick. I found that you have to wait for a long time as the fish inspects its prey before "striking," which it does violently and with great speed. It is surprising how little food the fish actually needs.

The Reed Fish provides an interesting addition to the community tank, though fish smaller than 1 in. in length will disappear over a period of time. With its startling snakelike features, row of small dorsal finlets and its habit of sticking its tubular nostrils above water to breathe in air once every 10 minutes, it is indeed an exotic, active and unusual fish. I have never heard of Reed Fish being bred, but apparently it can be sexed, males having 12-14 rays in the anal fin, and females 9-12. It is a hardy fish, relatively easy to feed and keep as long as its aquarium has a tight-fitting lid. It is unfortunate that it is only rarely obtainable, often unpopular, and is to be had only in its smaller sizes (12 in.).



Leading members of three National Federations get together at Belle Vue for an informal chat. Each association presents a large public exhibition annually in collaboration with this magazine. Left to Right: J. Nimmo (FSAS), S. Naismith (FSAS), R. D. Esson (FBAS), G. Cooke (FNAS), T. Cochrane (FSAS), C. Brown (FBAS).

## BAF 1979

EARLIER THIS YEAR than ever previously, the 28th British Aquarists' Festival had to compete against seasonal counter attractions not the least of which was the final week of the school holidays. However, although attendances were seemingly lower, the exhibition attracted its usual devotees from far and wide among whom was the accustomed throng of stalwarts supporting their societies and eager to join in the competitive spirit.

The familiar tableaux were smaller than before, reflecting rocketing material costs although the one entered by Belle Vue Aquarist Society was built for an outlay of less than £2.00. In the main the accent was on subtlety rather than impressive technical detail and the first award winner exemplifies this factor. Immitating a neatly crammed bookshelf complex, the viewer found himself forced to examine all of the 200 or so book titles which had been compiled on the basis of a play on fish names and fishy matters such as: Fish Fingers by P. Rhana, Bubble-nesting Fish by Anna Bantid, Angelfish by Pearl E. Gates and Scorpion Fish by Ivor Sting.

Bridgewater Aquarist Society's tableau (2nd prize)

simulated an arched bridge spanning a stream and Macclesfield A.S. went for gaudy colour in their Pisces Discoteque with which they secured fourth prize.

Wolverhampton A.S. had an octagonal tableau surmounted by a large coelocanth replica which slowly opened and closed its mouth. Each of the eight sides carried, under its inset aquarium of fish, cleverly made reliefs of fossilised fish such as *Xenacanthus*, *Hemiclaspis* and *Pteromsculus*.

The Champion of Champions was a large *Distachodus sexfasciatus* owned by Mr. R. Atherton of Hartlepool A.S. who also won second award for a *Pseudotropheus fuelborni*. Third prize went to Mr. A. Underwood of Sandgrounders A.S. for a jewel-like Texas Cichlid.

Best Fish in Show (coldwater) was a truly magnificent common goldfish owned by Mr. F. Seymour of Merseyside A.S.

The Northern Goldfish and Pondkeepers' Society delighted everyone with their usual splendid display of Shubunkins, Lionheads, Fantails, Moors, Rudd, etc., and carried off the first, second and third prizes





Winner of G.S.G.B. cup for Shubunkins by R. Howarth of N.G.P.S.

in Class 10 (Shubunkins) and a First in Class 13 with a Lionhead which displayed its contented mien by remaining almost motionless and in suspension throughout the show. Basingstoke A.S. neat tableau was an enlarged edition of a two page spread from their Society magazine, "Forum," and comprised a full description of *Labeo bicolor* with a splendid specimen of this red-tailed shark forming the illustration and which secured first prize in Class 24(s) (Carp and Minnows).

Bury Aquarist Society collected a host of awards including five first, two seconds and five thirds. Champion of Champions.



Wrexham A.S. 1st award winning tableau.

Halifax A.S. had a neat stand but its attractive feature lay in its tanks which won first award for Tropical Individual Furnished and first for Coldwater Individual Furnished which latter housed a trio of young fantails.

Fishkeepers A.S. displayed some nice marines



winning a second award for a *Paracanthus pleatus*. They also gained a first in Class 32b with a *Pseudonys script elegans* terrapin.

The Dealers' stands, too, contained some good fish and goldfish varieties and African cichlids abounded. Kalven Aquatics in particular, had some eye-jerking Clown Loaches of great size and splendid quality.

A common complaint voice at aquarium shows concerns the shortage of coldwater fish but, as mentioned earlier, the N.G.P.S. always make sure that such a criticism cannot be levelled at the B.A.F.

Regrettably, marine exhibits were thin on the ground as has been the vogue everywhere of recent years. All in all, though aquarists found most of their particular favourites within the wide spectrum of species and varieties of fish displayed.

Publicised as a two-day event, a show of this kind involves three days of setting up and exhibiting, stewarding and dismantling but follows a year of planning and co-ordinating and those involved only can appreciate the immense amount of work required to make the final product a success. They are to be congratulated on their unsparing efforts and the ultimate achievement of such a show.

## CHAMPION OF CHAMPIONS Competition Results



**1st**  
**R. Atherton**  
*Distochodus sexfasciatus*  
Hartlepool

**2nd**  
**R. Atherton**  
*Labeotropheus fülleborni*  
Hartlepool

**3rd**  
**A. Underwood**  
*Texas Cichlid*  
Sandgrounders

### RESULTS OF OTHER FESTIVAL COMPETITIONS

Tableaux: 1, Wrexham; 2, Bridgewater; 3, Osrarn; 4, Macclesfield; 5, Belle Vue.

Society Furnished, Halifax. Independent Furnished: D. Shields (Halifax); Best Fish, Common Goldfish: E. Seymour (Merseyside). Best Pair: Mr. and Mrs. B. Walsh (Darwen). Best Aquascape: H. Haslam (Belle Vue). Best Novscape: E. Seymour (Merseyside). Best Breeders, highest pointed: K. Buckley (Bridgewater). Best Tropical: L. Groves (Sandgrounders). Best Coldwater: E. Seymour (Merseyside) Tropical Furn. Society: 1, Halifax; 2, Northwich; 3, St. Helens. Coldwater Furn. Society: 1, Halifax; 2, Northwich; 3, NGPS. Tropical Furn. Individual: 1, D. Shields (Halifax); 2, L. Thorne (Northwich); 3, E. B. Trevis (Bury). Coldwater Furn. Individual: 1, D. Shields (Halifax); 2, A. Mills (Bury). Marine Furn.: 1, 2 and 3, C. Rose (Warrington). Aquascape: 1, H. Haslam (Belle Vue); 2, L. Thorne (Northwich); 3, Mr. and Mrs. N. Stevenson (Osrarn). Novelty Aquascape: 1 and 2, E. Seymour (Merseyside); 3, Mr. and Mrs. Stevenson (Osrarn). Plants: 1 and 2, D. Shields (Halifax); 3, E. Jones (Wrexham). Comm. Goldfish and Comets: 1, E. Seymour (Merseyside); 2, P.

Hewitt (NGPS); 3, A. Buckley (Bury). Shubunkins: 1 and 2, R. Howarth (NGPS); 3, P. Hewitt (NGPS). Moors: 1 and 2, P. D. Lane (NGPS). Veiltails: 1, P. Hewitt (NGPS); 2, P. D. Lane (NGPS); 3, Miss Andrews (NGPS). Fancy and New Variety: 1, D. Gordon and S. Stephenson (NGPS); 2, P. Hewitt (NGPS); 3, Gregory and Lord (NGPS). A.O.V. Coldwater: 1, J. Buckley (Northwich); 2 and 3, R. O'Connell (Osrarn). Coldwater Breeders, Single Tail: 1 and 2, P. D. Lane (NGPS); 3, L. Baxter (NGPS). Twin Tail: 1, P. Hodgkinson (NGPS); 2, D. Gordon and S. Stephenson (NGPS); 3, P. D. Lane (NGPS). Guppy: 1, J. Hutchings (F.G.A.); 2, T. Carney (Bridgewater); 3, Mr. and Mrs. Stevenson (Osrarn). Platy: 1, Mrs. I. Strange (Basingstoke); 2, A. Standing (Bury); 3, I. Brown (Stretford). Swords: 1 and 3, H. Murray (Hyde); 2, M. Strange (Basingstoke). A.O.V. Livebearer: 1, A. Standing (Bury); 2, M. Strange (Basingstoke); 3, Mr. and Mrs. Bentley (Osrarn). Guppy: 1, R. Wheatley (F.G.A.); 2, J. Lester (F.G.A.). 3, J. Hutchings (F.G.A.). Molly: 1, R. Barrow (Stretford); 2, Mr. and Mrs. R. Iddon (Sandgrounders). Platy: 1, A. Standing (Bury); 2, K. Corbett (Merseyside);

3, A. Buckley (Bury). Swords: 1, Mr. and Mrs. Horrocks (Osram); 2, M. Strange (Basingstoke); 3, A. Standing (Bury). A.O.V. Livebearer: 1, A. Hamlett (Northwich); 2, Mrs. M. Hooley (Fishkeepers); 3, P. Martyn (Basingstoke). Rift Valley and Lakes (S.): 1, T. Reid (Fishkeepers); 2, D. A. Whitehouse (Wolverhampton); 3, R. Payne (Merseyside). Rift Valley (P.): 1, J. B. Rowley (Bury). Dwarf Cichlids (S.): 1, D. Lacey (Fishkeepers); 2, Mr. and Mrs. Walker (Merseyside); 3, J. Corbett (Merseyside). Dwarf Cichlids (P.): 1, C. Heath (Northwich); 2, P. Swales (Halifax). Cichlids Large (S.): 1, L. Groves (Sandgrounders); 2, Mrs. B. Newall (Glossop); 3, J. Haley (Darwen). Cichlids Large (P.): 1, T. Cotteril (Hyde); 2, Mr. and Mrs. Orchard (Wrexham); 3, P. Swales (Halifax). Siamese Fighters A.V. (S.): 1, K. Corbett (Merseyside); 2, J. Buckley (Northwich); 3, D. Conway (Darwen). Siamese Fighters A.V. (P.): 1, Mrs. H. Blades (Fishkeepers); 2, B. W. Carter (St. Helens). Gouramies and Paradise (S.): 1, Mr. and Mrs. P. Yates (Darwen); 2, M. Burgoyne (Bridgewater); 3, P. Swales (Halifax). Gouramies and Paradise (P.): 1, L. Bradley (Northwich); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, J. Shackleton (Halifax). Barbs (S.): 1, Mr. and Mrs. Brannon (Osram); 2, A. Mellor (Blackpool); 3, P. Kenyon (Sandgrounders). Barbs (P.): 1, Mrs. H. Blades (Fishkeepers); 2, Mr. and Mrs. Stevenson (Osram); 3, Mr. and Mrs. Goddard (Macclesfield). Characins (S.): 1, A. Buckley (Bury); 2, R. Tomkinson (Glossop); 3, F. and S. Whitehouse (Wolverhampton). Characins (P.): 1 and 2, Mr. and Mrs. B. Walsh (Darwen); 3, Mr. and Mrs. Mathers (Wrexham). Carps and Minnows: 1, W. Harmsworth (Basingstoke); 2, Mr. and Mrs. P. Yates (Darwen); 3, R. Payne (Merseyside). Carps and Minnows: 1, Mr. and Mrs. Walker (Merseyside); 2, J. Haley (Darwen); 3, I. Brown (Stretford). Cats (S.): 1, F. and S. Whitehouse (Wolverhampton); 2, R. Tomkinson (Glossop); 3, H. Buckley (Fishkeepers). Cats (P.): 1, Mr. and Mrs. Brannon (Osram); 2, M. Burgoyne (Bridgewater); 3, R. O'Connell (Osram). Killies (S.): 1, K. Buckley (Bridgewater); 2, R. Scoltock (B.K.A.); 3, A. Brown (B.K.A.). Killies (P.): 1 and 3, K. Buckley (Bridgewater); 2, H. Buckley (Fishkeepers). Loaches (S.): 1, Mr. and Mrs. Underwood (Sandgrounders); 2, Mr. and Mrs. Willaims (Wrexham); 3, Mr. and Mrs. B. Walsh (Darwen). Loaches (P.): 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, W. D. Haddow (Hyde); 3, J. Shackleton (Halifax). Marine (S.): 1, C. Heath (Northwich); 2 and 3, Mrs. and Mrs. Wainwright (Fishkeepers). A.O.V. (S.): 1, T. Reid (Fishkeepers); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, D. Kidd (Wolverhampton). A.O.V. (P.): 1, J. Haley (Darwen); 2, F. Oliver (Wrexham); 3, D. Kidd (Wolverhampton). Breeders (Egg): 11-15: 1, K. Buckley (Bridgewater); 2, M. Strange

(Basingstoke); 3, R. Scoltock (B.K.A.). Breeders (Egg) 6-10: 1, K. Buckley (Bridgewater); 2, A. Mellor (Blackpool); 3, R. Payne (Merseyside). Breeders (Egg) 1-5: 1, B. Wilson (Sandgrounders); 2, S. Dunn (Runcorn); 3, E. B. Trevis (Bury). Breeders (Live) 11-20: 1, Mr. and Mrs. Baldwin (Sandgrounders); 2, K. Thompson (Merseyside); 3, P. Martyn (Basingstoke). Breeders (Live) 1-10: 1, A. Buckley (Bury); 2, R. Blight (Basingstoke); 3, Mr. and Mrs. Goddard (Macclesfield). Amphibians: 1, Mrs. H. Blades (Fishkeepers); 2, A. Casey (Blackpool). Trophy for Exhibitor with Most Awards: P. D. Lane (NGPS).

Show League: 1, Sandgrounders; 2, Merseyside; 3, St. Helens; 4, Osram; 5, Darwen.

## New B.K.K.S. Trophy



The British Koi Keepers' Society's new cup, the Ken Fawcett Memorial Trophy, created by the membership in memory of their late President, Mr. Ken Fawcett of Reigate. The cup is for the largest Koi entered in their National Open Show and this year was awarded to a 26 inch Hi-Utsuri owned by Mrs. Lorrette Reynolds.



*Aphyosemion arnoldi*

## *Aphyosemion arnoldi* Boulenger 1908

by Fred Wright

(Technical Editor of British Killifish Association)

Photos by M. Addicott (B.K.A.)

### **Biotope**

A species which inhabits slow moving streams and brooks in the Niger Delta area of Nigeria. The recent (1975) import into the BKA came from near Warri. Other populations have been reported, from Oweri. In the main, it can be safely assumed that the range of this species is rather limited.

### **Description of the male**

Basic coloration light orange to brown and with a dorsal ridge of pale green. The eye is shining green; lips edged red. Around head, just behind eye are two vermiform crimson markings with a further streak which is broken by the eye and then

*Aphyosemion arnoldi*



continues under the chin. Crimson markings are present along the flanks and may vary in numbers between individual samples, mostly they are very few. The throat region is deep orange. The dorsal fin is large and rounded in appearance, basically blue-green at the root with large crimson spots, outer third of fin orange. Anal, large, rounded, basically pale blue at the root and pale orange for two thirds of the fin with a number of large crimson spots present. Caudal very well developed and possessing streamers at top and bottom lobe in mature specimens. Basically pale to deep orange with some blue streaks appearing in the centre of the fin which is superimposed with a number of crimson spots which reach to the caudal peduncle. Inner margins of fin crimson, outer margin, at the point nearest caudal peduncle, light blue, remainder of outer margin pale to deep orange with extensions (filaments), top and bottom, becoming almost brick red. Size attained in the aquarium about 2½ inches for a very good sample.

### **Description of the female**

The females of the species bear a striking resemblance to the females of the species *Aphyosemion filamentosum* Meinken 1933 and with females of the Cameroon species *A. robertsoni* and *A. rubrolabiale*, species which must form members of this complex of fishes. In coloration the females of *A. arnoldi* are a drab green-olive and exhibit part formed blackish bars upon the flanks and some small spots of the same hue. All fins are transparent. In shape the female is quite a robust little fish.

Size attained in the aquarium about 1½ inches for a good sample.

### **Maintenance**

Can be rather fussy about water conditions and does not appear to tolerate hard water for very long. Perhaps the optimum conditions are waters having a pH of some 6.4 with a hardness of from 2° to 4° German. Peat base to the tank suits well with diffused lighting to give the fish a sense of security, some top cover of plants or mops also is of benefit. Temperature requirements from 74° to 78° F, high temperatures maintained for too long a period will shorten the life span of this species. All live foods greedily accepted, some dried foods may be taken.

### **Breeding**

The above quoted aquarium conditions will suffice for breeding attempts. Contrary to fish keeping literature, *A. arnoldi* is not a plant or top spawning species but deposits eggs on the tank base or substrate preferring a silty type of material. Peat moss of a fine variety seems to be the best media for use as a spawning ground. Eggs are laid on and off for a period and then a long period of rest may take place without the breeding partners taking any interest

THE AQUARIST

in each other except for the occasional domestic upset. Egg production is never overwhelming and maybe it is best if egg collection is left for two weeks and then the eggs and substrate are scooped up in a net and dried as for the annual fishes. The period of dry incubation is for one month. Peat containing the eggs is added to mature water with temperature of 74°F and gently stirred. Hatching takes place almost immediately and the new fry are able to accept fine brine shrimp and within a day or so, micro worm. Salt of the common variety should be added to the fry raising tank when the fish are a few days old. This is done to avoid outbreaks of Velvet disease. Fry should be given as large accommodation as possible as soon as they are large enough to be transferred. Growth is moderately

rapid. With careful feeding full maturity is reached within five to seven months.

One suspects that in its natural habitat, *A. arnoldi* might be something of an annual or part annual species. Its life span within the confines of the aquarium seems to be about 15 to 20 months.

#### Summary

A very beautiful *Aphyosemion* which is well worth the effort of propagation. Not always an easy fish to maintain. Sluggish in behaviour in captivity but this characteristic enables one to observe its exquisite coloration. Not a species for the beginner.

For information on the BKA write to: Mr. A. A. Brown, 173 Parr Lane, Unsworth, Bury BL9 8JN.

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## PRODUCT REVIEW

IT CANNOT be too strongly stressed that an all-glass aquarium has a lot in its favour. For one thing, there is no frame to rust away or keep tarted up with touches of fresh paint when wear and tear begin to detract from its appearance. For another thing, there is no danger of the fish being adversely affected by water-tainting substances leaking out of an untreated metal-supported structure or putty-like mastic. Conspicuous, too, is the fact that an all-glass tank permits a better view of the interior and its contents.

For all that, if there is one idea that puts some aquarists off an all-glass tank, it is the idea of easy breakage. Yet it is highly improbable that the panels in an all-glass tank are any easier to break than those in a framed tank if the top edges are reinforced with some plastic strip and it is stood on a reasonable thickness of expanded polystyrene or woollen cloth spread over a sheet of hardboard placed on a level surface.

All of which leads me on to say that Dow Corning Silicone Rubber Aquarium Sealant and Adhesive has earned the reputation, over long years, of being always trustworthy. With the right-sized tube for the job and five pieces of glass (of the right thickness), it is not beyond the powers of any aquarist blessed with the modicum of patience and commonsense to fashion a fish tank in an evening. The sealant dries to the

touch in an hour and a made-up tank is ready for use (after a wash out with clean water) before another two days are out. Provided the edges of the glass to be joined are cut true and are meticulously clean (wipe them over with a piece of cotton-wool soaked in methylated spirit) there is no reason why anything should go wrong. (Full instructions for the sealant's application are supplied with the product).

A properly sealed all-glass tank will remain leakproof indefinitely—or so it seems. The manufacturer's guarantee is for 10 years. A Doe-Corning sealant-sealed tank can be stored dry for months or until the aquarist is ready to use it. Ordinarily a dry-stored tank, sealed with a regular putty-like substance, leaks after filling. Cracking and shrinkage of the putty-like substance is the cause.

Dow Corning Silicone Rubber Aquarium Sealant has plenty of aquarium uses. To give a few examples of its versatility. Blobs of it can be applied to a dry surface to support a glass cover. Then again, it can be used to secure a loose-fitting lift-tube of an under-gravel filter to the neck of the aperture that gives access to the water-circulating chamber below. It is useful for bonding valves or making simple hinges. Summing it all up then this sealant is well-suited to the aquarist's kit of aids to trouble-free aquarium keeping.

Jack Hems

# THE GARDEN POND

## *Pests and Diseases*

by Arthur Boarder

THERE ARE A number of pests and diseases which can trouble pond keepers but it must not be thought that one is likely to come across many if any in a number of years. Many of the various kinds can be avoided with care and there is no doubt that most of them may only occur if one has done something careless or has omitted to do something which could have avoided the trouble.

The various pests can be divided into those which live mainly on fishes, those which live in the water and can attack or harm fishes especially very small ones and there are those which do not live in water but may visit ponds on occasions. The pests which live mainly on fishes can be avoided to a large extent by care when introducing new fishes to a pond. Any new addition must be examined carefully to make sure that no visible pests are on the fish which could set up a recurring nuisance later on. However, not all pests have to be introduced to a pond on a fish as some may be brought in on water plants in the form of eggs or cysts.

One of the nastiest pests to worry fishes is the fish louse, *Argulus*. These creatures are not much more than a quarter of an inch across and are almost transparent so can be overlooked if not searched for very carefully. They can be likened to a miniature Plaice in shape and they can swim freely in the water although they will not live for long unless they find a host for food. They have suckers which enable them to secure a firm hold on a fish and may be found on the body, not often on the back, and especially at the junction of a fin. Once an *Argulus* finds a host it attaches itself and then sucks the blood from a fish causing it a great deal of irritation. Several pests may be on a fish and it may be seen to dash about rubbing itself on stones etc. in an

effort to dislodge the pest. The louse will only leave a fish if it dies or, in the case of a female *Argulus*, leave to lay its eggs which can be as many as a hundred. They are white in colour and oval in shape and after they are laid they are covered with a jelly-like substance. The eggs hatch in about a month and the tiny creatures must then find a host or perish. The commonest species is *Argulus foliaceus* and another which is often found on wild fishes is *Argulus coregoni*.

The pests can be picked off a fish with tweezers but the easiest method to clear a fish is to immerse it in a fairly strong solution of either T.C.P. or Dettol. A half teaspoon to the gallon of water is strong enough. As soon as the fish is immersed the lice will leave the fish and drop to the bottom and die. The fish must only be in the solution for a few seconds and if it turns over, remove it immediately to fresh water where it will soon recover. In case there may be fresh lice hatch out later, the treatment can be repeated weekly.

Other pests which can worry fishes are the Flukes. There are two main species, the Gill Fluke, *Gyrodactylus*, and *Dactylogyrus*. The former are born alive and may immediately attach themselves to the same fish as the parent Fluke. The latter hatch from eggs and have to swim around to find a host. If they cannot do so they will soon die. The Flukes do more harm on very young fishes and are very small, being no more than a twentieth of an inch in length. They can move on a fish with a looper-like movement, like some caterpillars. If a young fish is badly infested it will dash about rubbing itself in similar fashion to the action of a fish with lice. The fish may soon show small blood streaks on the body, go off its food and mouth at the surface. It will soon become emaciated and then die.



### Quarantine

It can be realised that the likeliest way to be troubled with these pests is by not quarantining a new fish before it is added to the pond. As some eggs may be laid on stones or rocks, these should be thoroughly cleaned before they are placed in the pond. There is no doubt in my mind that many pests are introduced to ponds with live foods which have been obtained from ponds, rivers, lakes or canals. Such live foods include, Water Fleas, (*Daphnia*), and *Tubifex* worms. I know that many pondkeepers use these foods and if they care to take the risks it is up to them. Many years ago I fed with *Daphnia* I had caught in a pond and got a bad attack of flukes and fish lice for my trouble. Once was enough and I have not used such foods again. If *Daphnia* can be bred in conditions known to be free of pests and diseases this is all right and they are a good food for young fishes.

Another pest which may attack pond fishes is Anchor worm. This is not a worm but a crustacean, a parasitic copepod, *Lernaea cyprinacea*. It appears as a darkish thread protruding from a fish where it is firmly attached by two or three "arms" which act as an anchor whilst the pest is attached to a fish from which it feeds. These are females which usually have egg sacs at their rear ends. The males are free-swimming and small, similar to *Cyclops*. From the eggs young larvae



emerge as a form of *nauplii* which swim around until they find a host to feed on. The pests can be removed by touching them with neat Dettol or T.C.P. and picking them off with tweezers. In a bad pond infestation the best method to clear them is to empty the pond and leave for a few days to dry out.

There are several pests which may cause trouble in the pond which do not live on fishes but could attack and injure them. One such creature is the Great Diving Beetle, *Dytiscus marginalis*. This beetle is about an inch and a quarter long and olive-brown in colour. It is a good flyer and often enters a garden pond at night time. Therefore this is one pest which is not easy to guard against. The beetle has to come to the surface for air and this is taken in at its rear end which is uppermost when the creature surfaces. At such times it is not difficult to catch one with a net. These beetles are carnivorous and can attack and bite a fish. Eggs are laid in a slit in the stem of a water plant.



The larvae are, if anything, more voracious than the parents and can grow quickly to about two inches long. They have a pair of sickle shaped mandibles with which they can attack a fish. They also have to take in air at the rear end and can be caught at the surface whilst so doing.

### Water beetles and bugs

There are a few other water beetles which may appear in the pond and their capture is by using the same method. I have found that it is a very good plan to visit the garden pond at night with a strong torch as many of the free swimming pests can be found at the surface and they are much easier to catch with a net at such times. Another pest which can appear in the pond is the larva of the dragon fly. There are two main types of dragon fly which may visit the pond, the large well known dragon fly and the smaller Damselfly. The larvae can attack fishes and two main types can be

found, the squat bodied type and the longer bodied one. The former may be caught by dragging a net along the bottom of the pond, where they often lurk.

Another free swimming creature is the Water Boatman and one of the commonest is *Notonecta glauca*. They may be seen at the surface when they take in air and their long rear oar-like legs can be seen plainly. These propel the bug through the water at a fair speed. These pests have a type of beak with which they can pierce the body of a fish and they can kill small fishes. They are very light in the water and cannot keep below surface unless they hold on to something, such as water plants. The females lay their eggs in a slit in a plant stem similar to the water beetle. As they are so often at the surface they can be caught with a net but watch the beak which can give a nasty prick to the fingers.

Pond Skaters, *Gerris najas*, the more common species can be found on most ponds. It skates about on the surface film in search of insects etc., which have dropped on the water. They do no harm to fishes as they never enter the water. The water Scorpion, *Nepa cinerea* can be found in some waters and is usually on the bottom. It can kill a small fish with its beak in a method similar to that of the Water Boatman, and so should be destroyed if seen.

#### Leeches

Another pest which can be introduced to a pond is the Leech. There are several species found in this country and they may be recognised by their flat bodies which are capable of being extended to some inches and then withdrawn to just a blob of jelly-like substance. They have a sucker at each end, the one at the rear is large and is used to hold on to its prey whilst the one at the front is much smaller and is used for sucking the blood from a fish etc. These pests are free-swimming and when a fish is found they will hold on to it and suck its blood until replete and then they may fall off. The species, *Piscicola geometra* appears to be the most common one found in garden ponds. Leeches have both male and female organs and eggs are usually laid on stones or water plants. If a fish is found to be attacked by a leech it is important to get it off as soon as possible. To prevent further damage to a fish the leech can be touched with paraffin when it will release its hold. It is not easy to free a pond of these pests but most spend the day time under stones on the bottom. One method of catching them is to lay flat stones, tiles or pieces of slate on the bottom. These must be examined each morning when leeches may be found underneath. A jar trap can also be used. This can be made from a screw topped jar. The inside of the lid is cut away so that a small funnel can be inserted and held in place by the screw top. Attach a piece of plastic string to the jar, place a piece of fresh meat inside and lower in the pond. Examine each morning and leeches may be caught.

#### Other Predators

There are several predators other than inhabitants of the pond which can take fishes. Kingfishers can catch many fishes from a pond and if there is a river or stream near, it is quite possible to have one as a visitor. Any overhanging branches or arbours will make a convenient perch from which the bird can dive to catch its prey. Other birds can take fishes and the Heron is the one to be feared most. This bird can clear a fish pond in a few visits. It is usual for the bird to alight beside a pond and then walk into it. A strand of fine wire about eighteen inches high round the pond near the edge is a good frightener. Crows, rooks, owls and even blackbirds can also take fishes from the garden pond. I lost many young fantails through the latter finding my rearing tanks. The prowling cat can also catch fishes, and some are expert fishers.

One predator which visited my pond once, was a grass snake. These are very good swimmers and they will eat fishes which might seem much too large for them to swallow. I found a fully grown frog inside a grass snake whose head was no wider than my thumb. Although such creatures can visit a pond, it is probable that none will visit yours. In open parts of the country it is a possibility that one or more may cause trouble. There is one time when one must be extra careful. It is when the fishes are spawning. At such times the fishes appear to lose all sense of fear as they become very excited. Also they will often lie on top of bunches of water plants near the edge of the pond when it is an easy task for a cat to take them. I remember one spring when a couple of Mallards visited my pond, and would land on the lawn and walk into the pond. My efforts at catching one for a meal were unsuccessful, but they caused me some concern nevertheless.

#### Diseases

There are a few diseases which may trouble the pondkeeper but providing due care is taken when introducing fresh occupants to the pond, and all new purchases should be kept by themselves for a few days to keep any chance of disease entering the pond. An almost certain sign of good health in a fish is when the dorsal fin is held erect. This fin acts as a warning signal and if it is kept lowered for some time, it is a sure sign that something is wrong. If a fish shows such a sign it is well to remove the fish from the pond for individual treatment. It is no use wasting time trying to cure an ailing fish whilst it is still in the pond with others.

Another sign that a fish is not well is when it mopes by itself and refuses to take food. This is a sure warning sign and signifies that the fish requires treatment and should be removed from the pond for observation and medication. It is probable that the ailing fish is the only one in trouble in the pond and it is no use



wasting cures on the rest of the fishes which are in good health. Also, one needs to have the fish under constant observation in a tank where it can be treated as necessary.

#### Fungus

The most common disease which can affect pond fishes is Fungus disease, *Saprolegnia*. This disease can be encountered in most waters but providing a fish is in good health it will not be affected. The disease usually only attacks a very weak fish or one that has been injured. It shows as white patches of woolly-like substance and can spread if not treated. Any wound on a fish is very likely to be infected. From small white tufts in perhaps one spot, the disease can spread and eventually kill the fish. Any fish showing signs of the disease must be removed from the pond for treatment. A fairly strong solution of salt in water is usually enough to effect a cure unless the disease has taken too strong a hold and the gills have been infected. A strength of a tablespoon of sea salt to the gallon of water usually effects a cure. Place the affected fish in a clean container with a wide surface area and add sea salt at the above rate. Leave for a few days and if the water appears to have become foul, change it to a similar strength solution. After a few days the fish should show improvement when the strength of the solution can be gradually reduced. Do not return the fish to the pond until it is cured. Table salt should not be used as it contains sodium carbonate to keep it free-running.

#### Whitespot

Whitespot Disease, *Ichthyophthiriasis*, is caused by a parasite which is contained in a tiny spot on the fins or body of a fish. The spots are very small not exceeding one mm. in diameter. Each spot can contain one or more parasites, protozoans called *Ichthyophthirius multifiliis*. When the parasite is mature it leaves the fish and drops to the bottom where it forms into a cyst. From this cyst numerous young parasites will emerge to search for a fresh host. The rate of development of the pests depends on the warmth of the water. At one of 70-80 F., the pest will mature and drop from the fish but it can take a month if the temperature does not keep higher than 50 F. A sure cure is to have two tanks working with no plants nor gravel and introduce the affected fish and increase the temperature. Remove the fish to a fresh clean tank every day and so the pests as they drop from a fish can be washed away before they have a chance to produce more parasites. Whilst the parasites are embedded in the skin of a fish they are almost impossible to kill with any chemical which would not also kill the fish.

#### Dropsy

A disease which can sometimes affect a pond fish is

Dropsy. This is caused by a small rod-like organism known as *Aeromonas punctata*. It appears to only attack fishes which are out of condition or weakened by other troubles. The signs of an infection are a swelling of the body and later the scales protrude; the fish becomes very distressed and soon dies. The development of this disease is hastened by warmth and so a pond fish in a water temperature of 50°F. may live for a month but in a temperature of 70°F. development of the pest can cause death within a few days. In my opinion any fish which has become badly infected with the disease has little chance of living. It has been recommended to puncture the skin of a fish and withdraw the fluid, but I do not see how this can cure a fish. It might relieve the swelling but it is not likely to kill any bacteria still inside the fish. Personally I have never known a badly affected fish to be permanently cured. Prevention is the better way to keep free from such a disease and a large step towards this is to see that there is no over-stocking in the pond nor over-feeding which could pollute the water. As with most ailments of fishes, the healthy ones appear to be immune to most water troubles.

#### Fin-rot

Fin-rot, a form of Fungus disease can sometimes attack pond fishes. The tail and dorsal fins are usually the first to show signs, such as fraying at the edges and then an eating away of the fin. An early treatment with an antiseptic will provide a cure. The disease is caused by a bacteria, *Bacteriosis pinnarium*, and its effects can eat away tail and fins. If the trouble is not treated in time, the disease can spread to the body of the fish when it can prove fatal. The affected fish can be held in a wet cloth and the fins dipped into an antiseptic or antibiotic. Some aquarists advise cutting away the torn parts but this need not be done unless the fin is very shredded. Once the disease has been halted the fin can grow again in time.

Swim bladder trouble is apparent when a fish is unable to keep on an even keel. It may remain upside down on the bottom; occasionally trying to swim to the surface but soon sinking again to the bottom. This condition is often caused by a chill when the temperature of the water has dropped suddenly. It sometimes is caused in short bodied fancy goldfish when too much dried food has been given. A cure is usually fairly easy by placing the fish in a shallow container with just enough water to cover the extended dorsal fin. If the temperature of the water can be raised to about 70-75 °F. for a few days, this should provide a cure. No food should be given whilst the fish is under treatment.

It must be remembered that many troubles can be avoided by not over-stocking the pond with fishes nor feeding more food at a time than can be quickly cleared up. Good conditions will mean less troubles with the fishes, a more enjoyable hobby.

# WHAT IS YOUR OPINION ?

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

MR. DANIEL BENNETT resides at 24 Blackshaw Road, Old Glossop, Derbyshire, and writes as follows: "After reading Dr. Andrews' letter in the July edition I decided to write to you concerning a new method of hatching brine shrimps. It involves using chlorine to strip away shells, leaving the shrimp cysts encased in just a thin membrane. They can be fed to the fish in this form, without being hatched; after the shells have been dissolved, the rest is 100% edible. I have used this method several times and I'm very pleased with the results. To hatch brine shrimps in this way one teaspoonful of shrimp eggs should be added to 3 oz. of water and left for an hour. Then two teaspoonsful of liquid chlorine or a chlorine bleach is added. The mixture should be stirred for about four minutes. You can see the eggs change colour as the shells dissolve. Then, after four minutes, the mixture should be poured through a net; the contents of the net should be well rinsed in fresh water and then dipped in a glass of water containing one teaspoon of vinegar to neutralize any chlorine present. Then the eggs are hatched in the normal way, i.e. put in the hatching solution and kept well aerated at about 82°F. This method has no ill effects whatsoever on the fish to which the shrimps are fed. All this information can be found on pp. 11 and 12 of *Pisces* 4, the F.N.A.S. Journal.

"Also, have any of your readers ever heard of a hormone that stops fish from growing without shortening their life or harming them in any way? My problem is a 1 ft. long *Osfrenonemus goramy*. It is the most intelligent fish I have ever kept; but unfortunately I'll have to sell it as I've no room for a tank wherein it can attain its full length of 2 ft. If there is no such hormone available, it'll have to go—something for your Exchange & Wanted column, perhaps." Daniel concludes his letter with the greeting: "Best Fishes."

I know of no available hormone that will stunt a fish's growth—although the growth of fry and young fish is frequently stunted if they are kept in a limited volume of water with adult fish of the same species. The adults release a substance that limits the growth

of the young fish. The growth of most animals and plants will be stunted if they are kept in adverse environmental conditions and deprived of a proper diet. Such animals and plants frequently suffer from diseases and illnesses. Many fish are kept in cramped conditions in aquaria and their growth is stunted. Such fish may not breed in the aquarium.

I should like to make a plea, dear reader: If you deign to write to me please ensure that your name and address are legible. Contextual clues frequently enable me to translate illegible words in sentences but such clues do not apply to names and addresses. I should appreciate it if you would *print* your name and address—and include your Christian name.

Mr. Geoffrey Knott's home is at 3 Edinburgh Road, Gillingham, Kent. He has kept fish for the past two years and has the following to say: ". . . The house we bought had a beautiful 5½ ft. tank installed in the front room bay window recess. The tank itself was in a state as it was thick with algae. There were a few fish, which included golden barbs, red swords, guppies and a single *Plecostomus* species. I replaced the old filter with a new power filter; I removed the 4 ft. household tube and replaced it with two 4 ft. Gro-lux tubes; and put in new 200 watt heaters and an outside thermostat. Then I bought a roll of dark blue, shiny paper, from W. H. Smith's, for a background; and after a lot of hard work got the tank set up.

"It was at this stage that I began to make mistakes. I bought all my fish and plants from a duff dealer. The plants wouldn't grow and all died; so I started buying plastic ones. I didn't know any better at the time. I stocked the tank with neons, serpaes tetras, bleeding hearts and gouramies—including pearl, golden, kissing, three-spot, dwarf and thick-lipped. From the first day I bought fish I lost them one by one. Later I had another tank—of 36 in.—stocked the same as above, and lost the lot again because of the thermostat sticking in the on position.

## Success

"That's all behind me now. I should have been put off for life but I stuck at it. I learnt about water

chemistry and fish behaviour and how to look after fish properly and now I have five tanks in the house (I have an understanding wife). My original tank is now stocked with cichlids and includes brown acaras, sheepshead acaras, orange chromides, kribensis, key-holes, flags and one large *Plecostomus*. The tank is furnished with bog wood and rock work which give a very pleasing effect. All the cichlids were babies when I bought them; now they are quite a size and I will soon have to thin them out. My other large tank—55 in.—is a community tank. It is stocked mostly with my favourite fishes, which are *Corydoras*. I have about 50 of these beautiful fish; about eight different species. I also have *Brochis* cats, shoals of serpaé tetras, cherry barbs, black neons, a pair of giant danios, pairs of black mollies, green swords, red swords, festivum cichlids, angels and kribensis. Another tank



is stocked with angels; and I have a fry tank and a quarantine tank. All the fish are fit and well and problems are very rare nowadays. I think some of the keys to successful fishkeeping are regular water changes and a varied diet for the fish. I do a weekly water change and feed my fish on ox heart, *Mysis* shrimps, *Tabifex* worms, blood worms, garden worms, scalded lettuce, runner beans, garden peas and flake food.

"For hatching brine shrimps I use an ordinary milk bottle. It has two double suckers on it and the bottle goes inside my quarantine tank. I put a teaspoonful of marine salt in the bottle and then fill it 2/3 full of warm water. Once in the tank an airline is inserted to add slow aeration. Too much air causes the eggs to be shot to the top of the bottle. The temperature is kept at 80°F. If I put the eggs in the bottle in the morning they are ready in the evening. When hatched I siphon them out onto a piece of stocking.

"Recently you asked about smoking and fishkeeping. I am a keen freshwater angler and have found that I get fewer bites if I bait my hook with my smoking hand—and vice versa. I feel this must have some bearing on our tropicals. When I feed ox heart the fish take it in then spit it out if I feed them with my smoking hand; yet when I use the other hand they do not hesitate.

"If anyone can tell me of his or her success with the breeding of brown acaras I would be very grateful. I would also like to get some Java moss. I have tried to get some for a year now with no luck. If anyone can let me have some I will gladly pay for it and refund postage."

On now to a letter that travelled a long distance to reach me. It was written by Canadian reader Mr. J. M. Cain, of 855 Woodpark Way S.W., Calgary,

Alberta, Canada T2W 2V7. He wrote: "In the April 1979 issue you asked for comments on several topics including the cultivation of various worms for fish food, and the effect of temperature changes on spawning habits of specific aquarium fish. I hope the following information will be of interest to your readers. Currently I am cultivating both white worms and microworms and although the methods used generally conform to those recommended in standard reference texts, I have found a couple of ways to improve these instructions.

#### White worms

"For the white worms I use a standard size wooden box (12 in. × 12 in. × 4 in.), tight-fitting glass cover, temperature in the 60°–68°F (16°–20°C) and moist bread. The difference between my cultures and the usual ones seen lies in the culture medium. I have used peat moss, rather than the usual soil, for several

years and have had much better success with my cultures as a result. The advantages of peat moss are: (a) the worms are cleaner as extracted and should any peat moss be introduced to the aquarium, it will do no harm; and (b) the moisture is much easier to maintain; the porosity and permeability of peat moss is generally greater than the usual soil and consequently the culture will not sour as easily. One should take care not to over-feed a new culture and to remove any mouldy bread. Periodically, loosen the whole culture by stirring up the peat moss and in the process aerate the culture. I have also found it a good idea to add a few new worms to an established culture after a year or so. This seems to enhance the culture's productivity. Those aquarists who have difficulty finding a cool spot for their cultures could try the slightly smaller grindal worm as an alternative. They do quite well at 75°F (24°C).

#### Microworms

"As mentioned earlier, I also culture microworms. There are many formulae given for culture media and the one I have had most success with is a mixture of three parts baby cereal ('Pablum') to one part bakers' yeast. This is mixed with water and blended until quite fluid. Small, plastic, petrie dishes (4 in. wide by 1/2 in. deep) are used as containers. About 1/4 in. layer of the culture medium is poured into these dishes. The worms are added and the culture is covered to prevent evaporation. In a few days the worms will have multiplied tremendously and a sufficient number to feed quite a few fry will have migrated to the underside of the petrie dish cover, where they can be easily collected.

"As the worms will sink fairly quickly in the nursery tank, many will be missed by the fry unless a bare bottom is used. A useful technique for feeding these worms is to place the worms in a very fine mesh net or brine shrimp sieve. The worms will slowly work their way through and the young fish will be waiting for them. Microworms seem to be very tolerant of temperature and will do well in the 60°-80°F (16°-27°C) range. The advantage of a smaller culture is the ease with which such a container can be cleaned. Anyone who has had the unpleasant task of cleaning a large, soured culture will appreciate that statement. A culture will last from two to four weeks but it is a good idea to start a new reserve culture every ten days or so.

"As regards the effect of temperature changes on the spawning of specific aquarium fishes, I have noticed some surprising results, depending on the species. For example, in my attempts to spawn *Ctenopoma ansorgei* (ornate *Ctenopoma*) I had read that these and other members of the genus were warmth-loving fishes. A temperature of 78°F and above (26°C) was recommended for maintenance and 85°F (29.5°C) for breeding. I tried this higher range initially and had

no success. However, I found that these and other *Ctenopoma* species are quite content at 75°F (24°C) and *C. ansorgei* at least will spawn at 77°F (25°C), as mine did recently.

"On the other hand, I have had success with some types of fish by lowering the temperature. The *Corydoras* species will respond to a decrease from 75°F (24°C) to 70°F (21°C) by spawning. I recently had the same experience with some *Hoplosternum littorale*. A heater failed and by the time I noticed the problem the water temperature had fallen to 70°F (21°C). Instead of becoming chilled, the catfish responded by building a bubble nest and spawning. Incidentally, these and the closely-related *Callichthys callichthys* are excellent species for the beginner to work with. The young are quite large and will take newly-hatched brine shrimp or microworms from the start. Given sufficient room, the fry grow very quickly.

"With temperate water fish I have found it necessary to give them a few months of rest in relatively cool water before attempting to spawn them. I recently was successful in breeding one of the pygmy sunfish, *Elassoma evergladei*. These beautiful little fish will thrive at 60°F (16°C) and if given a varied diet of live and frozen food will spawn if the temperature is raised and maintained at anything above 65°F (18.5°C). However, so important as temperature can be, I think many aquarists have found their fish have spawned accidentally as a result of (a) a water change; (b) introduction of live food; (c) being left alone for two or three days. I have a pair of *Polycentrus schomburgkii* (South American leaf-fish) that will spawn regularly if given a large quantity of live fish. I enjoy reading your column very much and would be interested in hearing from any readers on the subjects of Nandids and unusual Anabantid fishes."

I trust you found Mr. Cain's letter as interesting as I did. I included it uncut because both content and English were of the highest standard. Those who followed my dying fish saga will not be amazed to learn that my last cardinal followed its siblings the day after I concluded last month's *W.Y.O.* Last time I saw cardinals for sale the cost was 80p each. What is their price in your part of the country? Photograph I shows one of my late cardinals. How successful have you been in attempting to spawn this species? Have you raised any fry to maturity? If so, I should be pleased to publish full details in a future issue.

#### Dogs

"At the last meeting of the Medway Aquarist Society we had a bring-and-buy sale. Amongst other things, I bought a large pile of old *Aquarist* magazines going back to the 1950s. I read a couple of letters to *W.Y.O.* concerning fellow fishkeepers' dogs and how they react to their owners' fish," says Mr. G. E. Knott, from his home at 3 Edinburgh Road, Gillingham, Kent. He continues: "I have a small Jack Russell

terrier and he is absolutely fascinated by my fish. I have six tropical fish tanks in the house, plus one other tank that contains frogs and some tadpoles. The dog's name is Russell and his favourite tank is my 6 ft. cichlid tank which is sited in the bay window recess in the front room. The base of the tank is just 4 in. off the floor so this is ideal for Russell to sit to watch all that goes on in comfort. Besides the cichlids in the tank there is a large *Plecostomus* and this is Russell's favourite. As soon as the pleci comes out of hiding Russell is there, eyes glued to him. Wherever the pleci goes, Russell goes. One of the things the pleci likes to do is to attach himself to the front glass and inch his way to the top, then attach himself to the *Tubifex* feeder. This little display really excites Russell: he will whine and sit up, getting as close as possible.

"With the other tanks, I place a stool nearby and



Russell hops up and just sits there for hours looking at them watching their every movement. When it is feeding time he will follow me round all the tanks insisting he smells the food before I give it to the fish, as if giving it his approval first. His favourite part of fishkeeping is when I have to net fish for one reason or another. I place a bucket on the floor and siphon the water out into the bucket. This isn't easy as Russell keeps trying to bite the end of the hose. When I start netting the fish his nose is about  $\frac{1}{2}$  in. from the surface of the water. When I go to put the lid on he gets a bit aggressive and snarls at me. On past netting operations the odd fish has jumped out of the net or the water and as quick as a flash Russell has picked it up and run straight out into his basket with it. To date I have not lost any fish through Russell's attentions. One day, perhaps!

"The frogs and the tadpoles are going down with Russell. He will whine and beg until my wife or I

lift him up so that he can have a look. Last week he got one of the tadpoles and ate it. I hope you have found this amusing. Without Russell, fishkeeping wouldn't be the same!"

#### Plants

No. 6 Inglis Road, Colchester, Essex, heads a letter written to me by Mr. Edmund Tuxford. "I thought I would drop you a few lines to tell you about my success with aquarium plants. The tanks I have set up are 39 in.  $\times$  12 in.  $\times$  12 in. and 24 in.  $\times$  10 in.  $\times$  10 in. The larger tank is lit by a 20 watt Gro-lux tube and the smaller by a 15 watt Gro-lux tube. Neither tank receives any sunlight nor has any artificial fertilizers added. The lights are on for approximately 14 hours per day. The pH is 7.0 and the temperature about 76°F. Plants grown successfully are: *Aponogeton crispus*, *A. undulatus*, *Bacopa*, Amazon sword, *Hygro-*

*phila*, *Nomaphila stricta*, *Vallisneria spiralis* and *torta*, spade leaf, *Samolus*, wistaria and micro sagittaria.

"I thought you might also be interested to know the results of using growth food. I separated a batch of 60 red wagtail platies into two 24 in. tanks. One batch I fed on growth food and the other on staple food. Within four months the batch fed on growth food were approximately one third larger than the others—although their colour was not quite so intense. Both batches were occasionally given feedings of live *Daphnia*."

#### Snails

I have frequently included letters written by Miss Margaret Cairns in this feature; and I've frequently commented on her beautiful handwriting. Miss Cairns, who resides at 16 Lonsdale House, Portobello Court, Portobello Road, Notting Hill Gate, London W11 2DG, sent me this letter in September 1978.

"Regarding the advantages and disadvantages of snails in aquaria, I've just finished (I hope!) a battle with these pests and am now finding one unexpected advantage in having *had* snails. Plants rarely do well in my tanks; even those which last for a long time don't seem to grow or reproduce with much enthusiasm. I've experimented with different varieties and gradually learned to avoid those pretty plants which are sold for aquaria but really belong in a window box. Incidentally, I've just seen a busy Lizzie (*Impatiens*) used in a tank. Despite fertilizers, plugs etc. the plants refused to thrive and I finally decided to leave well enough alone and resign myself to buying supplementary plants every few months.

"On reading your article, *Growing Aquatic Plants* (March 1978), I decided I was lucky to have any at all! My tanks are too dimly lighted and I'd almost invariably moved plants which didn't seem to be doing

all the fish in my smaller tanks because I could not attend to them. However, a friend had transferred those fish, which might survive when kept with larger specimens, into the dwarf cichlid and angel tanks, which are large enough to function for long periods without attention. By the time I got back to the aquaria the dwarf cichlid tank had become an aquatic slum. Most of the plants were rootless and floating—forming a refuge for swarms of baby guppies and mollies—while the gravel was so heavily infested with snails that it seemed to shift and stir with a sinister life of its own. A brood of *kribensis* was desperately trying to compete for food and oxygen—and the daily harvest of 20 or 30 snails picked out by hand hardly seemed to touch the problem.

"To cut a long saga short, commercial 'snail killers' didn't do the job and I finally had to remove the fish and plants, boil the gravel and bogwood, and heat the



well. Attempts to provide brighter lighting seemed to upset the fish; however, I decided to order some of the recommended plant species by post, extend the periods of lighting and see the effects of leaving the plants alone.

"The *Cryptocoryne* species which arrived didn't look very impressive and I hesitated to use all the usual pest controls in case these killed the plants. This was a mistake. The plants were divided amongst my tanks and I found a Malayan burrowing snail in the dwarf cichlid tank a couple of days later. This was removed at once; but these snails are prolific live-bearers and unfortunately the little brute had already proved it!

"At this point I became ill with pleurisy and the three months' illness was followed by the polytechnic exams (I passed). During this period I lost almost

all the fish in my smaller tanks because I could not attend to them. However, a friend had transferred those fish, which might survive when kept with larger specimens, into the dwarf cichlid and angel tanks, which are large enough to function for long periods without attention. By the time I got back to the aquaria the dwarf cichlid tank had become an aquatic slum. Most of the plants were rootless and floating—forming a refuge for swarms of baby guppies and mollies—while the gravel was so heavily infested with snails that it seemed to shift and stir with a sinister life of its own. A brood of *kribensis* was desperately trying to compete for food and oxygen—and the daily harvest of 20 or 30 snails picked out by hand hardly seemed to touch the problem.

"To cut a long saga short, commercial 'snail killers' didn't do the job and I finally had to remove the fish and plants, boil the gravel and bogwood, and heat the tank to a lethal level. The plants were soaked in warm water and the mingled remnants of the failed 'snail killers'. (Incredibly, I later found one live snail in the tank, but it was removed before reproducing.)

"Although I tried to remove the snails' bodies I finally had to set up the tank with a flooring of about 90% gravel to 10% boiled snails! The result was surprising: the tattered plants took instant root, grew and thrived. It is almost embarrassing; the tank contains many nests and hiding places but was intended to be fairly bare of plants to facilitate observation of the cichlids' behaviour. As it is, I can't find some of the fish. I'd intended to move the bulk of the plants and enriched gravel into other tanks—especially the angel tank—in which the conditions and the resident fish are more suitable for plants. However, yesterday I found a large Malayan burrowing snail in the angel

tank. This tank is 24 in. deep by 24 in. wide, difficult to get at, and contains four pairs of angels (which dislike disturbance) and numbers of almost uncatchable tetras, khuli loach and *Boria*. The snail was removed as soon as I saw it—as was the first snail seen in the dwarf cichlid tank—and I'm now waiting, and watching the gravel with apprehensive horror." (Photograph 2 shows some Malayan snails covering a tank.)

Last year Mr. Martin Searle, of 28 Aysgarth Road, Yarnton, Oxon., was kind enough to get a friend, at Oxford University Botanic Gardens, to identify several plants that I could not identify in my own tanks. Mr. Searle sent me some interesting comments about a fish he bought locally. He wrote: "... Several months ago in one of our local shops I found, tucked away in a tank on the floor, a single blue fish. At the time the shop was having a half-price sale on all their stock. I was simply told that it was a 'Malawi' and would cost me 45p; very cheap for such a fish. It turned out to be a *Labeotropheus fuelleborni* and a very fine specimen at that and at times a most brilliant blue—much like some of the blue marines one sees. It took me several more months to find a female, for which I paid £3.00. She was a little thin at the time but she soon fattened up on whitebait—a food, by the way, which my Oscars like very much.

#### Malawi Mum

"For those who have never come across *L. fuelleborni* (Fuelleborn's cichlid), they have an undershot mouth and are mouth-brooders. I was told that once the female laid her eggs and picked them up, she would not eat for a further 20—25 days while she hatched and kept the young in her mouth. I should be interested to know if this is so because this particular fish started to eat again after 14 days and my wife and I thought all was lost—although the fish had a very bloated look about her face. After 21 days, there they were: 16 fry about 1 cm. long. Again, we were told that they would only go back inside the mouth for a further 24 hours and then be free-swimming; yet she managed to pack them in for a further five days. It was quite a thing to see her if she was disturbed when they were out: she would just go around with her mouth open, and three or four seconds later, at an incredible speed, they would all be in. How she ever managed on the last day I shall never know because they were all of 1½ cm. long and she's not much more than 14 cm. herself. So, is this normal or have we got an extra-good mum?"

Photograph 3 shows the Australian rainbow. If you have kept and bred this species please send me details.

#### Rogue fish

"I suppose everybody has had an experience with a rogue fish," says Mr. A. D. Webb, who lives at 164 Ladysnot, Harlow, Essex. "Mine is a half-grown tin-

foil barb. I purchased him for my beautifully-planted community tank when he was a mere 2 in. long. How could such a pretty little fish be as bad as everybody says, I wondered. Well, for five months everything appeared to be fine; apart from the fact that he tended to eat rather more than any of his tank-mates he was no trouble at all. He did grow rather quickly though and was soon as large as my fully-grown kissing gourami which, I can say, has never given me any trouble with bullying or plant eating since it was given to me by a friend as it had outgrown its tank.

"Unfortunately, over the past couple of weeks, I began to notice that my *Vallisneria* was becoming reduced to a mere stubble and there were *Cryptocoryne* leaves floating on the surface of my tank. The final straw came when he attacked and half ate one of my kuhli loaches (*Acanthopthalmus kuhlii kuhlii*). I had owned my pair of loaches for two years and despite their reputation for being shy my pair had always swum about and eaten unmolested night and day and used to spend hours chasing each other about at all levels of the tank; so naturally I had become quite fond of them and seeing one of my friends killed before my eyes caused me to decide that something had to be done with this vicious killer. I promptly set up a spare 3 ft. x 15 in. tank and placed the culprit in it along with a firemouth cichlid which, though harmless, did tend to pester my *Corydoras*. Although their new home is 12 in. shorter than their last one this should suit them. I have also put in a red-tailed black shark which was outgrowing its 24 in. tank.

"All seemed well for the first couple of days until I put in a large piece of wood that I had found one day and had boiled for several hours, as is generally recommended. The next day all three fish were continually mouthing at the top of the tank and refusing all foods—even raw beef and cooked peas, which were the tinfoil's favourite. Immediately I removed the wood and changed half of the water. This seemed to do the trick as all three fish are now behaving normally except that they still do not appear to be eating. I hope that by the time this letter appears in print they will be eating normally; but just in case, has anyone got any ideas on inducing fish to feed?"

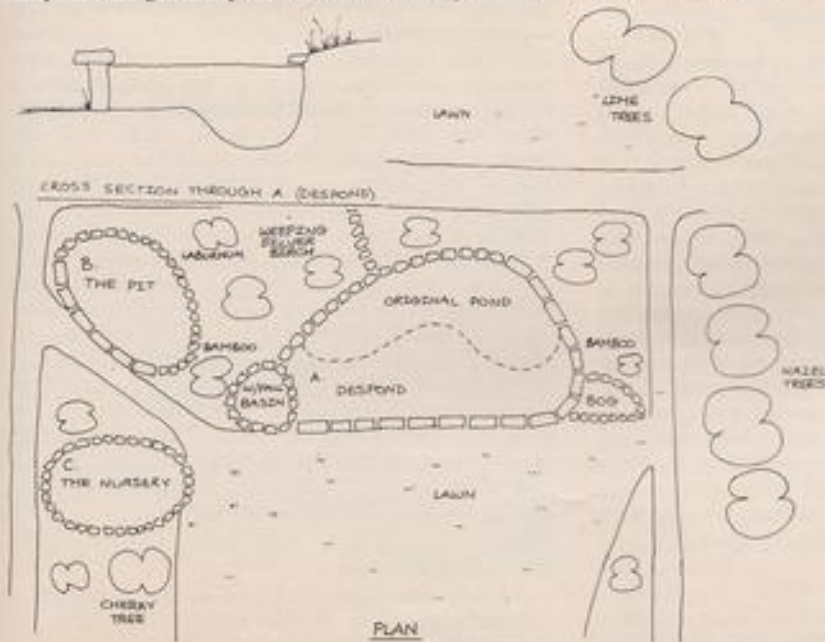
Well, I've used up all the space and most of the spare letters. Please do send me your opinions on any of the following topics for inclusion in a future *W.Y.O.* (a) breeding dwarf cichlids; (b) cultivating *Cabomba* species in a community aquarium; (c) breeding any species of gourami; (d) types of rocks suitable for use in aquaria decorations; (e) sources for calcium-carbonate-free gravel; (f) softening water for use in an aquarium; (g) the usefulness/effectiveness of patent 'medicines' for use in the aquarium, e.g. cures, snail killers, fertilizers; (h) do you notice any change in plant growth in indoor tanks during the shorter days of autumn and winter? Drop me a line when you have time. Good-bye until next month.

# Commentary

by Roy Pinks

AT THE TIME of writing, early September, I can record that I have now completed an intensive and comprehensive renovation of my three garden pools. This project began on 8th July, with the aim of rendering them operational before the winter set in, so that I could undertake some measure of breeding in 1980, together with experimental use of plants and techniques of potential value to the average pondkeeper. Much has been written about setting up pools from scratch, but there is far less on the subject of patching up and making the best of things in the middle of international and domestic cash crises. So I have assumed throughout that we are all a bit hard up and that what we do have to spend is invested in resources likely to give the most satisfying return. A feature which I mentally noted, too, was the possibility of incorporating one or two modern techniques which I have hitherto ignored as being purely unnecessary gadgetry. However, many folk are genuinely interested in knowing what is

the real value of a fountain or a waterfall or a pond heater, and I am glad to say that with the invaluable help given to me by Lotus Water Gardens, I am now in a position to develop the theme during the coming season. I should make it clear that I have confined my programme to the horizons of the general pondkeeper, and for this reason the more sophisticated filtration and conditioning systems associated with the culture of Koi and similar fish have been left for separate treatment. The narrative will be the clearer to follow if I give a little background to the geography and nature of the pools concerned. The sketch below shows that there is a large one, A, which we will call Despond on account of the total lack of hope when the project started. A smaller but quite deep one, B, is The Pit because it was simply that: a dry earthen hole half full of weeds. The third, C, again smaller in area and a mere foot deep, is The Nursery. But at least it contained water. And all my colleague's fish.





### Concrete

Despond was constructed of concrete about twenty years ago, and it occupied the area shown by the dotted line. It was then known as The Pond, and it was soon thriving and full of fish and plants. It was not very adventurous, being flush with the adjoining lawn, and it eventually developed the inevitable leak, the source of which, as usual, was almost certainly well below the water line. As a feature it began to look rather too small for the overall proportions of the garden, and its whole future came under review when our first infant made her appearance as, unguarded, it was extremely dangerous. It will be noted that the proximity of a number of trees (including laburnum) was a source of some anxiety, but after careful consideration of every other aspect in the garden (rather less than an acre) it was decided that, at least, the spot chosen was about the only one which stood up to our version of aesthetics. Pond planning is often done by the book, and when the fishkeeper has ruled out here, there, and almost everywhere, on the basis of some footling objection or the other, he often has to spend many years regretting that he cannot bear the look of the wretched thing in the spot where he actually put it. For, if you have chosen the place where you really want something, you will have to live with a number of imperfections, and here is the test of our ingenuity—and where much of the real enjoyment of fishkeeping comes from—the solving of problems rather than mere maintenance, the latter of which can become something of a chore. We accordingly decided that we would retain the pool but erect a low wall around it to deter the toddlers. At the same time, and with an eye to future expansion, we found it possible to double the water area and to incorporate two additional units. One was a raised basin on the left hand side, from which a waterfall would decant into the central pool, and a small, similarly shaped element on the right hand side, which would form a bog garden for subjects which preferred an inch or so of standing water. At the same time as this survey the sites for the Pit and the Nursery were earmarked, though it was several years before they were actually completed. The leaf problem (coupled with a temporary cat menace) was easily put to rest by means of sectional frames covered by wire netting, but it became clear that if the superficial area was to be so greatly enlarged, some lighter method of protection would have to be devised. This was before the advent of plastic garden netting, and as the only available material seemed to be the tar-impregnated type used for fruit crops, the matter remained unsolved for some time, and we had to compromise between raking out the autumn leaf fall with a wire rake and praying for a northerly wind to deposit it in the adjoining field.

### Plastic Sheeting

When it came to the choice of material we ordered a fabric based plastic sheeting from Highland Water

Gardens. In those days it was coming into its own as an alternative to concrete, and there were many sceptics of its long term value. This type is now marketed as Flexilene, and no doubt the formula has been improved over the years. It was certainly simple to install, even in the informal shape to which the pool had been designed, and it was a pleasing thought that all one had to do was to build a stone wall just as high and as extensive as one wished, pad the basin with an inch or so of builders' sand, and then lay the sheeting within it.

Two quite serious mistakes were made at this particular stage, and the precautions are not emphasized half enough in the general advice on the construction of informal pools. One is that the levels all round should be carefully verified and marked, and the second is that due allowance should be made for this in the final positioning of the sheeting. It also points to the need for accurately measuring your excavation before ordering the material, as an inch or two here and there can make a lot of difference. The effect on this pool was that failure to appreciate the importance of levels has limited the depth to which we can maintain the water, and some potential has been lost. It is possible that more careful alignment of the sheeting in the installation stage would have prevented this, but that was rather a long time ago!

Flushed with success at the appearance of the pond we introduced the usual dozen of orfe (both colours) and large breeding Shubunkins, together with a quantity of curious looking Goldfish which we had brought with us from our previous house. The plantings were pretty thin; we bought all the worst and most rampant marginals based on false eulogies in the catalogues, and poured in bucketsful of potassium permanganate when the usual pea soup began to thicken. The utter disaster wrought by this impetuous algae-eradication attack was unbelievable, and was never to be repeated. The failures of that early period were almost entirely due to impatience, and it is not surprising that I have campaigned ever since for the invariable practice of the natural seasoning of pools, because the sheer waste of both plant and fish life at that point was quite inexcusable. One of the most pleasurable experiences of the recent replenishment exercise which I have carried out was the daily inspection of the planted but fishless pond, to the extent that in the final stages I was actually deferring introducing the fish because other matters were so absorbing. The same goes for the freshwater tank. Most folk are far too keen to get the fish in after the initial setting up, and this is always to the detriment of plants and to the general well-being of the aquarium.

### The Right Plants?

Again in retrospect, the selection and association of marginals and deep aquatics left a lot of room for improvement, not so much because we had failed to

choose right plants, but because we had introduced far too many wrong 'uns. As a consequence, the species and varieties which one can always live with were edged out by those which had been selected on false premises, which I recommend should be specifically excluded from the average garden pool.

The Nursery was constructed before the Pit, and it was intended to house the fry from the main pool. It was built on the lines of the extension to the latter—a low wall round a shallow excavation, so that the water level would generally be a little over 16 inches from the floor. Blue polythene was used for this, and as there was no attempt to incorporate ledges or shelves for marginals, the mechanics were quite uncomplicated. The general idea was to transfer the output from here to the Pit, which was about 2 feet deep, with its surface at ground level. Again, blue polythene was used and the shape was a simple bowl, as its purpose was more functional than decorative excepting for the water lilies, which were planned for all three pools.

Over the years the breeding concept rather fell apart because of a continuing failure to cull, with the consequence that only the rubbish survived. A sudden opportunity to acquire a large quantity of native fish—mainly roach and rudd—caused both the Pit and the Nursery to be taken over as quarantine storage quarters, but somehow the fish remained there long after it was planned to remove them, and in any case the main pool was by then well up to its own quota, including natives and some fine Golden Rudd, all of which bred in modest proportions over a period of five years prior to the Great Drought.

The ravages of that awful summer, together with the ferocity of several bad winters caused me to look closely at the whole complex. The linings of the Nursery and The Pit had been renewed at least twice because of complicated cracking at the waterline—a creeping ailment which reduced the water level by a couple of inches per season, and which removed polythene for good from my shopping list of pool linings. In more recent years the water level in the main pool sank rather more rapidly after replenishment than looked healthy, and a number of quite severe fractures in the area of the waterline were noted. It seemed at that point that deterioration was likely to have spread to underwater areas, and I was faced with the likelihood that butyl, would have to be substituted, at appalling cost. So I faced 1979 with the likely need to line Despond with butyl, and the other two with Flexilene or something similar. Frost damage to the retaining walls had been widespread, and the capping stones of natural local stone were nearly all loose and therefore dangerous: furthermore many had split along their strata and were virtually useless. Since it is nice to sit down on the top of the wall and savour the perfume of the Water Hawthorn I took account of the need to provide some substantial and well anchored slabs at the business end of each of the pools, which had the added bonus of making them look as though they belonged to the same set of architectural thoughts.

On 8th July the mercury climbed to 77°F, I eased myself with some reluctance from the deck chair, and the assault on Despond began.

## NEW PRODUCT



Rainbow Plastics recently introduced their new SC-8 service unit for use by both aquarists and dealers wanting a powerful yet economical, pump

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combined with a highly efficient Lifeguard Commercial Filter.

The SC-8 uses an M1-19H commercial filter with the CL-19 cartridge (19½ in. long) coupled with a No. 1750 ¼ horsepower swimming pool type pump and motor rated at 50 gallons per minute at a 10 ft. head. Each unit comes complete with 10 feet of 1 in. flexible suction and return lines (each with control valve), 25 feet of ground electrical cord, a waterproof electrical switch, in-and-out "U" tubes (each with strainer attached), and convenient hose bib for quick draining.

This Lifeguard filter system is rated for continuous duty and would be an excellent choice for small central systems, as it will handle up to eighteen 10 gallon tanks. Many dealers, as well as lease/maintenance servicemen, will want to use the SC-8 to keep individual tanks in tip top condition since it only weighs about 30 pounds, stands less than 2 feet high, and accepts the Lifeguard AF-102 screw on carbon filter.

Dealers and service personnel can more than pay for the cost of this unit from the reduced maintenance time spent cleaning their tanks.

# Coldwater jottings

by Frank W. Orme

TYPING THESE WORDS during the evening of a blue-skied sunny day makes it seem unbelievable that by the time this article appears in print it will be November. November, the month of early morning mists, falling leaves of russet-brown, the drifting smell of gardeners' bonfires, and those long dark nights. Pleasant though this month can be—when Dame Nature feels so inclined—the signs give warning of the approaching winter. The forward thinking keeper of coldwater fish will have ensured that ample food has been offered, and will continue to offer until the temperature drops, to enable the fish to build up a sufficiency of body fats which will help to ensure its survival during the winter fast. If the pond has not been cleaned, (see last month's *Coldwater Jottings*), it will be attended to without further delay. Should any leaves fall upon the water surface steps will be taken to skim off as many as possible, to reduce as much as possible any chance of water pollution. Rotting vegetation, and other matter, below the frozen surface of a pond is a certain way of inviting trouble for the fish. These two factors in combination has been the cause of many fish deaths.

Young fish that have not reached a body length of around two inches will also stand a better chance of survival if they are removed from the outdoor pond, and placed into the more protected environment of an indoor tank. If, of course, the pond has a depth of less than eighteen inches it would be safest to weather all of the fish indoors—remember the severity and long frozen periods of last winter, and act accordingly. Far better to be over-cautious and safe than to risk lost fish through leaving things to chance.

Now is a good time to prepare some form of protection for the pond of average size—over large ponds may prove difficult, although a running waterfall will often keep an area of the pond surface free of ice. One method of giving protection is to make one, or more, wooden frames, lined with polystyrene, over which is stretched a sheet of clear polythene. If placed across the pond, just above the water surface, this type of screen will often prevent ice forming. However, if the water surface does freeze over, a hole should be melted into the ice and some of the water drawn off; lower the

water level to about four inches below the ice and then replace the protective screen—in all but the most severe of conditions, this should preserve an open space through which any noxious gases can escape. The top of the screens should be kept free of snow in order to allow daylight to penetrate; even in winter the plants and fish need some light.

Pond heaters can be used, if there is a handy electric point, to keep the water surface open. They should be suspended just below the surface, and only be of moderate wattage, so that the water is not warmed sufficiently to cause the fish to become active. On no account should any surface ice be broken; the blows needed to break the ice will cause percussion waves through the water which may concuss the fish.

Those who have fish-houses should make a point of checking, or installing some form of, heating apparatus. Whatever form of heating is used, it should work efficiently and give a clean pollution-free heat. High temperatures are not required, only sufficient heat is necessary to slightly warm the air and prevent thick ice forming in the tanks. The idea is to prevent ice causing damage to the tanks, not to keep the fish warm. A little ice will seldom damage a tank, whereas a build up of thick ice can exert enough pressure to break the glass. My own fish-house is heated by means of a greenhouse-type fan heater, this is coupled to a heavy-duty thermostat which is set to cut in at fractionally below freezing point and switch off at just above. Thus electricity costs are kept as low as possible and, although up to a quarter of an inch of ice may form on the surface of the water, no heavy freezing occurs.

A little preparation now could help to avoid any problems arising if a sudden spell of freezing weather strikes, and will obviate any possible risk of broken tanks and dead fish—it will be too late after the event!

★ ★ ★ ★ ★

During the course of the past few months I have managed to visit three open shows. Salisbury was, as always, well organised although it was somewhat late in opening its doors to the public. The enlarged schedule for coldwater fish, included a class for teams of young fish, and had attracted a most satisfactory

number of very good fancy goldfish. No doubt the committee of Salisbury A.S. will feel that their encouragement of the coldwater fishkeepers' entries was well worthwhile. I must say that members of this society have always made me feel most welcome when I visit them, and in particular David Jackson who has, on two occasions, gone so far as to arrange a lunch which after a longish journey has been very welcome.

Travelling north I visited the open show of the Northern Goldfish and Pondkeepers Society. This is the third year that the society has staged the event, and they have probably the best venue of all. Held in the spacious sports centre at Bolton, the hall is well lit by natural daylight and allowed ample space for the visitor to walk in comfort between the rows of glass tanks on the show benches. The standard of the exhibits was a pleasure to see, most being of very good quality. Again, I was met by a warm welcome—in fact, within moments of entering the hall I was advised to "Go and get a cup of coffee and a bacon butty". Visitors and entries had, in some cases, travelled quite longish distances, and included members from both the Bristol and Midland based societies. The only complaint which I had was the lack of ventilation, which resulted in a rather hot, stifling atmosphere. Last year the society had arranged two entrance points, one of which led directly to the outside, and this had allowed a cooling through-flow of air to keep the temperature at a comfortable level. Despite this minor complaint it proved a most enjoyable day and confirmed my view that the event is becoming a recognised show of quality—to be made a MUST in the calendar of goldfish enthusiasts.

The third show was that of the Bristol Aquarist's Society, which also celebrated their Golden Jubilee. This show attracted around 440 entries of high quality fancy goldfish and other coldwater species. Some of the 54 exhibitors travelled from far afield—as did many of the visitors who came only to view the many fine specimens that were on display. Although obviously very busy with the last minute jobs that arise during this time, a number of B.A.S. officials made a point of sparing a few minutes to welcome me and chat about things in general. Although not such a "glamorous" venue as that of the northern show, the church hall, nevertheless, allows plenty of exhibition space for the ranks of show benches upon which the plastic tanks were arranged in three tiers at a convenient height for viewing. Here I had the opportunity of renewing friendships with fellow aquarists from many parts of the country—always an enjoyable part of my visits to those shows which I am able to attend. Needless to say, after their many years experience of organising shows, everything went like clockwork, (the person who complained about modern shows—see this column in last month's *Aquarist*—would have been pleased to find both a programme and a list of exhibitors available.) Successful exhibitors were presented with a mounted

illustration of an individually painted Bristol shubunkin, neatly inscribed, "Bristol Aquarist's Society Golden Jubilee Year 1929-1979". A most attractive memento of the occasion; I understand that these mementos had been presented to the society by their secretary, Mr. Victor Cole, who had commissioned their preparation as a pleasant surprise for the show committee. I feel sure that these plaques will serve as pleasant reminders of this event to the recipients for many years to come.

When I first began keeping and breeding my strain of lionheads they were a very rare variety of goldfish. I worked quietly away to create my own line, and seldom showed the fish—for there were no classes in which I felt that they could be judged fairly. After a time I did occasionally exhibit a few, which did well in the mixed classes, despite being the only lionheads on show. However, over the past few years things have changed. Lionheads slowly became more popular, more appeared on the show bench and, eventually, some societies allotted a class for the lionhead in their schedules. How different things are now; the popularity of the lionhead has never been greater and, as one person remarked to me recently, "They are becoming as numerous on the show bench as the Bristol shubunkin". At the moment nearly all are imported fish; hopefully it will not be too long before home-bred fish are in the majority and we see many more exhibited on the show benches—for I am sure that British aquarists are quite capable of producing their own stock, and even improve the variety as has been done in the past with other varieties of goldfish which were once only available as imported fish. That some are already raising their own stock was quite evident from the number of young lionheads entered in the breeder's class at Bristol. A most welcome sight indeed.

In a future issue of this magazine I hope to give details of the various coldwater societies that exist in the British Isles. From the enquiries which I receive I feel sure that many readers would welcome this information. Therefore, I give an invitation to secretaries of any specialist coldwater society to send me brief details. Basically, all I need to know is when and where the society meets; what are its main interests; does it issue a newsletter to members; and, where should interested readers apply for further details? So far as I am aware I know of most, if not all, of these societies; however, it is only too easy to overlook one when typing the article—and secretaries do change. So, if you wish to be included, please make sure that I receive information, rather than relying upon my memory. I would add the same invitation to anyone who feels they have any information that would be of interest to the coldwater hobbyist—although I cannot promise that it will always be published. Only if I am given information is it likely to be considered for inclusion in this column. The invitation has been extended; it is now up to the interested reader to decide whether to accept or not.

# THE GOLDEN EYE DWARF CICHLID

by Wm. Crusio

*Nannacara anomala* is a dwarf-cichlid with the popular name of Golden Eye dwarf Cichlid. Here in the Netherlands we call this fish the draught-board-cichlid. This name refers to the colouration of the female when practicing brood-care.

For some time, more than 1½ years, I have had these dwarf Cichlids in my tank and recently I succeeded in breeding them.

Before I write of this, we will deal first with some details on the care of these little fish. With purpose I say "little", because in contrast with other cichlids, this dwarf Cichlid doesn't become very big. The male in my tank is about 6 cm long, while the female is app. 4 cm.

Also these fish lack most of the habits that are so annoying to the people who own an "underwater-garden" with many beautiful plants. Digging or rooting hardly occurs with these fish and they don't harm the plants. By the way, this is a trait they have in common with most of the dwarf-cichlids, as for example the species of the genus *Apistogramma* and the Butterfly Cichlid, *Papiliochromis ramirezi*, which until recently was named *Microgeophagus* or *Apistogramma ramirezi*.

The interest I have in dwarf-cichlids, and more especially in the Golden Eye Dwarf Cichlid, isn't brought about by their lack of digging and things like that alone, but also by their brood-care and their interesting behaviour on the whole.

When I bought these fish, they were not even half grown. Therefore they all showed the characteristic colouration of a female and it was impossible to see to which sex they belonged.

After some weeks one of the fish died, but the other three were doing very well. They were fed with a varied diet of: *tubifex* worms, *daphnia*, a little dried food and sometimes some young swordtails that were born in the tank.

Now and then they were also fed with fruit-flies (*Drosophila*) and once they received plant-lice, ants and chopped earth-worm. Except for the ants they ate all this in big quantities and grew well.

When they became somewhat bigger, they became more aggressive towards each other, although they

hardly bothered themselves with the other fishes in my tank. After some time the situation became stabilized. One fish (somewhat smaller than the others) was chased by the other two fishes who became more and more dominant. They divided the tank in two parts, a small one for the smallest, and a large one for the bigger of the two. But still I could see no differences between the sexes. All the fish showed still the feminine colouration. After some time I therefore concluded that I was in possession of three females. So when I saw in a pet-shop a large male *Nannacara* I quickly bought it, although he was almost twice as expensive as the other dwarf cichlids I had bought earlier.

When this male entered my tank the peace he had enjoyed in the shop left him. As soon as the two dominant females saw him he was pursued until he could find some cover. As a result one could find him most of the time together with the third female behind a small filter.

After some weeks this third female turned out to be no female at all; it was a male. Perhaps the presence of a competing male stimulated him to show his true colours. However, after two months he died from a disease, so I was left with 2 females and 1 male.

Their behaviour was in one word fascinating. For instance, after feeding with *tubifex* one female started to protect this from other fishes. During this protection she showed all the beauty of her dark chequered colouration. Now also started a period of continuous mating. Several broods were produced at intervals of two to three weeks. As far as I could see the male showed no preference for one of the females and easily spawned with both of them.

Around Christmas time another brood was produced. This time in a very peculiar spot, somewhere in a corner of the tank on the aquarium glass. Since I had some spare time at the moment I siphoned some of the eggs out of the tank and put them in a pot which was aerated.

After some three days little tails could be seen wriggling from the eggs. The next morning the eggs were hatched. To be honest, I must admit that only 13 eggs hatched, although I had as many as 50 to 100 altogether. Most of them becoming fungused.

After another three days the fry had absorbed all of the yolk and I fed them with pulverised *tubifex* worms. As far as I could see nothing was eaten. To prevent pollution caused by the uneaten food, the water was refreshed twice daily. After another two days I fed them with some *Artemia*. These were also refused. Small *Daphnia* also didn't please them and some days later all the fry were dead.

Meanwhile the production of new broods continued. One evening, while watching t.v., my eye was caught by some very wild movements in my tank. One of the females swam on her side with one eye completely missing.

As I felt some pity with the little creature, I destroyed it, but I surely felt surprised. Only the other Golden Eye dwarf Cichlids could have done this, but normally their aggression didn't go so far as to damage each other. So I inspected my tank to see if there was something special. And immediately I saw the cause of the aggression: the other female was swimming around with some fry. It was the first time this had happened. The other times the brood had been eaten by the parents before hatching. Speaking of broods: once I made a little experiment. On a rock in my tank were many eggs. In order to try to save some young fishes on this occasion, I removed the stone from my tank and placed it in a separated tank. In this were only three small *Pseudepiplatys annulatus*. These fishes

didn't harm the eggs, but nevertheless after 1½ days more than half the brood was covered with fungus. Because I didn't expect any improvement, I replaced the stone in the original tank. To my surprise the mother immediately started to protect the brood and removed the fungused eggs. Nevertheless after some hours all eggs were eaten.

Back to the fry that were swimming in my tank at last. These were fed with waterlice and cyclops, which were eaten hungrily. The little fish grew well, although many were eaten by the other fishes in the tank. Of the original 50 after some days only 11 were left. These 11 fishes grew well and were heavily guarded by their mother; all became adult.

After some 8 weeks, the fry showed the characteristic mid-lateral stripe, displayed by males and females before reaching adulthood. After that they still possess this strip, but it disappears as soon as they start courting. Then the female shows her chequerboard pattern and the male his beautiful colours.

When you scare the animals at this time you'll be surprised to see how quickly these patterns disappear again. The changes in colouration and colouration-pattern are extremely quick with this dwarf-cichlid. As you see, one can talk hours about the Golden Eye Dwarf Cichlid (and dwarf cichlids in general). All I can say in conclusion is: why don't you try them?

#### OBITUARY

On 8th September last, Arthur Kirby (50) former chairman of the Gt. Yarmouth & D.A.S. died in Northgate Hospital, Gt. Yarmouth.

The membership of most aquatic societies is made up of tropical freshwater, marine and coldwater enthusiasts, with individual interests as diverse as showing, breeding, plants and decor, genetics, and so on. Those who have had involvement in society activities will know that it is no easy matter to maintain interest and participation among members. It requires a special type of leadership to promote and sustain interest in a society. This type of person need not have won Best-in-show trophies by the dozen, they need not have bred everything from the easy Guppy to the difficult Discus, nor need they hold an 'A' class judging certificate. Indeed, by their very single-minded nature such people are probably unsuitable as organisers of society activities.

At Gt. Yarmouth we were fortunate enough to have the kind of person a society needs to guide it through the initial years.

Around 1970 the Gt. Yarmouth and District Aquarist Society (GYDAS) was reformed, and soon after Mr. Arthur Kirby became chairman. The usual activities were pursued. Affiliation to local and national federations, coach trips to national

shows, monthly magazine, participation in internal, local and national shows, and visits to national meetings and seminars. In addition, and remembering that the society was still in its infancy, a Tropical Fish Exhibition was undertaken. Arthur became co-ordinator, the exhibition was a success, and it has since become an annual event. In a few short years the society established itself and was competing with the best.

Just how much of the societies relative success can be directly attributed to Arthur cannot be assessed, but it is safe to assume that without his leadership and organising ability much of it would not have happened.

When Arthur finally stood down as chairman he and his wife Margaret were made honorary life members of the society, as a small token of our appreciation at the time. We had hoped to find other ways of thanking him later. Now we will never get that chance.

Members and friends of the Gt. Yarmouth society extend their deepest sympathy to Margaret and her family. We understand the feeling of loss, the emptiness, and the finality, for we too have lost one of our family.

MR. P. G. WATSON,  
Secretary for GYDAS.

## BOOK REVIEW

**Fancy Goldfish Culture** by Frank W. Orme. Saiga Publishing Co. Ltd., £7.50.

Instructive and absorbing reading for all lovers of the goldfish is to be found in Mr. Orme's valuable and well-written work, to the preparation of which he obviously devoted long hours of research backed by years of practical experience combined with keen observation.

*The Introduction* recalls the author's boyhood days when, 'as a child I knew a favourite place where only the song of a bird or the distant bark of a dog would disturb my enraptured contemplation of the mysterious world in and around a magical water.'

The author's enthusiasm for his subject is infectious and will do much to encourage and prompt into positive action those who have been told or erroneously believe that keeping goldfish is difficult or something indulged in by eccentrics.

Although sticklebacks and other piscine inhabitants of local streams attracted young Orme's attention, a framed aquarium built with loving care by his father was deemed too magnificent to house any plebeian representatives of the underwater world. Therefore it followed that, in due course, and after some searching around, 'a pair of golden-hued fantails' were installed in the well-proportioned and properly furnished tank. Mr. Orme writes: 'Those two fish lived for many years and were a constant source of pleasure. It was during those halcyon days that my interest in fish was first formed.'

For all that, 'With time my interest waned, also the Second World War required that I should don a uniform.' Eventually the author was reunited with his young wife and baby son—and renewed his interest in goldfish. From a few indoor aquariums Mr. Orme progressed to a fish-house in which he spent the greater part of his non-working hours. With increased scope all round—with regard to extra space for more and larger tanks and better equipment—the author moved on to the more exalted breeds of goldfish and soon: 'Having taken the plunge I resolved to set about improving the various features and create my own line of Lionhead goldfish.'

In this ambition Mr. Orme has achieved signal success. Today his name is well known among all serious goldfish keepers resident in this country not only as a producer of first quality stock but as a regular contributor to this country's longest established and most respected aquarium magazine.

There are 260 pages in the book under review. The first chapter deals very thoroughly with the making of ornamental ponds in gardens which, generally speaking, are not on the scale of bygone days. The ponds discussed in considerable detail are formal or informal in shape, sunk below ground level or part below and part above ground level. 'My own preference,' the author affirms, is for the latter type which allows a low wall to form part of the structure; an ideal place to sit and, more importantly, it acts as a safety barrier against small children falling into the water.' Moreover, 'A low wall will often cause an excitedly rushing child to veer aside; whereas a ground-level pond may give no warning until it is too late.'

All sorts of ponds are dealt with: concrete, polythene (The least satisfactory on account of the deleterious effect exposure to the elements brings about), nylon-meshed reinforced PVC and, best of all, butyl rubber which can be cut and welded into shapes ideally suited to individual requirements. Then again, punctures in butyl rubber can also be made perfectly watertight with a permanent sealing repair tape. Nothing of importance is left out of this chapter: the rock garden surround or background, waterfalls, fountains, the incorporation of platforms or shelves for the accommodation of aquatics which flourish best in shallow water. Furthermore, shallows are invaluable for spawning fish and affording protection in the massed underwater vegetation for many of the eggs and hatched fry. The author then goes on to list and describe numerous water plants that grow completely submerged or carry their foliage and flowers above water.

*The Ornamental Pond* is followed by highly instructional and readable chapters on *Aquariums and Equipment*, *Aquarium Environment, Maintenance*, and *Anatomy of the Goldfish*. This latter chapter covers a lot of ground and, in language easily understood by the layman, explains, among other things, the meaning and importance of genetics, skin and pigmentation, the skeletal structure and nervous system, and the differences between the sexes, external and internal.

The chapter devoted to the *History and Development of the Goldfish* embraces a wide field. It traces the development of the goldfish from the wild muddy coloured fish of China to the highly developed and highly prized fancy breeds of today. According to occidental and oriental authorities who have done their homework, gold, silver, red,

black and mottled fish were being bred and sold in Hangchow as early as the thirteenth century. The educated guess is that the goldfish reached Japan about a century later. It is well known that oriental fanciers concentrated on breeding for colour, finnage, and form. Some 20 different varieties of fancy goldfish are described in Mr. Orme's book. Later chapters deal with *Selection and Transport, Foods and Feeding, Pests and Diseases, Breeding, Fish-Houses and Breeding Ponds, Competitive Showing, Societies, Books and Magazines, Photography, The Goldfish Calendar* (a chapter devoted to seasonal behaviour and care) and finally *Useful Information*, which includes a useful glossary, explanatory notes on scale counting (a method of identifying various carp) and more than a page of *Calculations* on such things as temperature conversion, metric measurements and other incidentals of interest and importance to the inquiring aquarist. There are very few misprints. It is only necessary here to mention Dr. Myton Gordon. It should have read Dr. Myron Gordon, one of the great figures in the world of aquarium fishes better known in the United States than over here. The text is illustrated by some superb line drawings and line-and-wash drawings by the author, together with many photographs in black and white and some eight pages in natural colour.

JACK HEMS.

**Water Gardens** by Gordon T. Ledbetter. Published by Alphabooks at £5.95.

Gordon T. Ledbetter's book should be read and studied by all who are interested in the design, construction, stocking and all-the-year-round maintenance of the ornamental garden pond. There has not been a book like it for years. So much about it is good; so very good. The scores of beautifully executed line drawings, the generous array of attractive half-tones, and the 15 colour plates are all of a quality suited to the well-written text. Yet for all that, your reviewer feels it his duty to draw attention to one or two slips in captioning. In the colour plate facing page 105 an oranda has been wrongly titled "Lionhead"; on page 42 the photographic reproduction in black and white captioned "*Vallisneria spiralis*—Tape Grass" is almost certainly not a species of *vallisneria* at all. However, errors of such small importance are swamped by page after page of helpful information and advice on, for example, ponds on patios, sunken ponds, raised ponds, split-level ponds, formal ponds, informal ponds, ponds with waterfalls or bubbling fountains or both and fascinating bog surrounds. The construction of these and more are dealt with in a full and practical manner in the first two chapters of this most readable book.

The first-time pond-constructor is warned right away of the dangers of leaving sharp-edged or flinty stones on the scooped-out matrix of a stretchable plastic or rubber-lined pond. He is also told of the importance

of removing dried leaves or pieces of dried grass from lengths of old chicken wire used to reinforce concrete bases and vertical walls (rusty wire is of no consequence). The author draws attention to the fact that a pond with margins out of line with the water level is an eyesore and states: "Whereas with fibreglass and liner ponds it is usually possible to make some adjustment to the level of the walls after the pond is completed, with concrete structures it is never possible. . . . Building up the offending wall is useless as the pond will not be watertight." Hence full instructions are given as to the use of straight board, spirit level and pegs to expedite and aid the levelling process. The knowledgeable pondkeeper (and aquarium keeper) is well aware that water in motion is an excellent producer of oxygen. But though fish appreciate a fountain or waterfall, Mr. Ledbetter emphasizes the fact that: "Water-lilies, unfortunately, will not." He continues "They like neither being continually doused in water—the flowers will tend to close up and sink—nor do they like disturbed water."

The chapter entitled *The Secret of Clear Water* is most instructive. Basically, the answer to ridding a pond of green water (free floating algae) is to starve the algae of its needs. As plants give out their quota of oxygen (under the influence of adequate light) in exchange "they also absorb the carbon dioxide and mineral salts essential to algae. And once the oxygenating plants have appropriated all the available food, the algae, in the unequal struggle for survival, simply die, and the pond becomes crystal clear."

All the same, the author makes it clear that actually to describe underwater plants as oxygenators is only half correct. Plants contribute only a small proportion of oxygen to their liquid environment; the greater proportion of oxygen in water is derived from the contacting atmosphere.

Mr. Ledbetter describes some dozen or so different species of submerged plants ideally suited to the garden pond and, as bonus, a few floating plants, hardy and non-hardy, that are far from niggardly in collecting and feeding on organic wastes.

To return for a few moments to the subject of waterfalls, though they may cause quite a disturbance in a pond hardly large enough to deserve the appellation, Mr. Ledbetter observes: "The case against waterfalls has, I think, been overstated. Not only will a waterfall raise the oxygen content but by moving the water through oxygenating plants, it will filter from the water the fine particles of mud held in suspension." He then goes on to describe the uses of large baskets of *Elodea* placed in the direct line of the current of water, as efficient filters.

In later pages plenty of space is given to the water-lily and its idiosyncracies. The colour plate of *Nymphaea "Marliacae Chromatella"* shows to the greatest advantage the beauty of this easily grown lily. There are five more plates of lilies for the ardent water



gardener to admire and maybe add to his existing collection. "Water-lilies" is rounded off with some well-informed comments on several other deep or deepish water aquatics such as the water fringe (*Vallisneria spiralis*) and the ubiquitous water hawthorn (*Aponogeton distachyus*). Furthermore, there are brief directions on the best ways of growing some of the tender water-lilies and species of nelumbo or lotus. Common and not-so-common marginal plants are dealt with in another chapter. This is followed by some 16 pages on plants best suited to habitually wet or moisture-retaining soil: the ornamental, and sometimes massive foliage plants such as gunnera—well-grown specimens will afford a person or two plenty of cover from a sudden downpour of rain—species of reum, enchanting ferns, colourful primulas, hostas, mimulus, marsh marigolds, and the like, not forgetting some of the decorative grasses, sedges, day lilies, and astilbes. The remaining

chapters are given over to *Fish and Livestock for the Pool*, *Keeping a Winter Aquarium* and *Pitfalls, Problems and Pond Care*. These subjects are discussed thoroughly. The book closes with an interesting *Diary of a Water Garden*, which takes the reader through the first month of the year to the following autumn. There are three appendices. The first on *Useful Figures and Conversions*, the second a useful catalogue of *Marginal and Bog Plants*, with the heights they might be expected to attain under favourable conditions, and their season of flowering or foliage display. The third appendix is devoted to the height and recommended habitat for nearly a score of choice ferns. There is an adequate index.

Mr. Ledbetter gardens in Ireland, south of Dublin, which no doubt explains why he omits to point out that *Elodea densa* will not survive a hard winter in the colder parts of this country.

JACK HEMS.

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## PRODUCT REVIEW

**The Silent Giant air pump, Gemini Products Ltd., Middle Engine Lane, North Shields, Tyne and Wear NE29 8DX. £17.40 plus VAT.**

The Silent Giant air pump, well known in America, is now on sale in Britain. It is a very superior piece of aquarium equipment. A very superior piece of equipment indeed which is constructed on original lines like no other air pump at present on the market.

It is canister-like in shape: an ivory-white canister slightly wider at the vented top (about 4½ in. across) than at the base. Particularly interesting is the system of filtration used to prevent lint, dust and other pollutants floating in the atmosphere reaching and therefore clogging the moving parts. To start with, there are three stages of foam and similar but less open-pored substances present near the air-intake to act as preliminary cleansing agents. In addition to this, there is a final stage of filtration made up of countless particles of waxed gravel, packed tight round the protective housing of the pump itself. This waxed gravel serves a two-fold purpose. For one thing, it means that greater efficiency in air-cleaning is attained. For another thing, the appreciable thickness of waxed gravel used acts as a far from ineffective noise suppressor.

The pumping mechanism is unique in that it is

completely free of such parts as diaphragms and bellows which ordinarily come in for such intensive wear and tear that they are apt to suffer from rapid, or fairly rapid deterioration after some months' of continuous use. In place, then, of these conventional parts, the Silent Giant's moving parts and seals are made of specially compounded neoprene milled and moulded at the manufacturer's own plant. Furthermore, the Silent Giant is automatic in action and easy on the pocket. There is nothing to oil and no knobs to adjust or switches to short or fail. The strong flow of purified air is more than adequate for a tank holding more than 150 gallons of water—and that regardless of depth. Yet all this on a total consumption of 4 watts of electricity. The pump comes neatly boxed with more than five feet of chocolate brown flex for connection to the electricity supply socket. Ordinarily the pump is placed on the floor and though the cup and plunger pumping system offers high resistance to back-siphoning it is recommended that a non-return valve be inserted in the air line. Spares for this quite outstanding pump are available in this country from the regular stockists or direct from Gemini Products Ltd.

JACK HEMS.

THE AQUARIST



# News from AQUARISTS' SOCIETIES

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.

IN conjunction with the City of Leicester Show at the Abbey Park, Leicester, the Leicester A.S. held their Show, for Society members only, where Furnished Aquaria and Breeders' Classes were on view to the general public. They were judged by Mr. Don Hutchinson from F.B.A.S. Results:—Furnished Tropical Aquaria: 1, J. Pearson; 2, N. Boot; 3, S. Poynton; 4, Mrs. F. Atkin. Furnished Coldwater Aquaria: 1, N. Boot; 2, H. Eavis; 3, Master R. Smith. Tropical Livebearer Breeders: 1, D. Sewell (Red Swords); 2, N. Boot (Green Sailfins). Coldwater Breeders: 1 and 2, B. Eavis (Shubunkins); 3, Master J. Townsend (Goldfish); 4, T. Gray (Shubunkins). Best Tropical Fish: J. Williams (*Corydoras schwanzi*). Best Coldwater Fish: N. Boot (Bitterling). Best Tropical Plants: Mrs. F. Atkin. Ladies' Section Winner: Mrs. F. Atkin. Junior Section Winner: Master J. Townsend/Master R. Smith. Most Points: N. Boot.

The Committee thank all exhibitors and helpers for their support prior and during the Show.

Koi East Anglia held their fourth Annual Open Show in the grounds of Waveney Fish Farm, Diss, Norfolk, with over 70 grand Koi on show. Around seven hundred visitors attended and this must have been the largest and most successful Koi Show ever held in Eastern England.

The Premier prizes in each class were won by R. Cranmer with the Best Fish in Show. This also took the trophy for the Best Fish exhibited by a member of Koi East Anglia. Best Taisho Sanke, R. Cranmer; Best Showa, Brenda Shackcloth; Best Kohaku, R. Cranmer; Best Tancho, Mac. Brister; Best Ohgon, K. Talbot; Best Asagi-Shusui, H. Brundish; Best Hikari Mono, A. Bailey; Best Kawaii Mono, H. Brundish; Best Utsuri, K. Groom; Best Beako, Mac. Brister; Best Haruake, T. Swain; Best Kim/Gon-Rin, Brenda Shackcloth; Best Doitsu, L. Crosby.

The top prize in the Raffle, a beautiful Hariwake, presented by the Managing Director of the Waveney Fish Farm, David Laughlin, and valued around £85, was won by a lucky visitor from the Southern area in the Fens. R. Cranmer also won The Aquarist Gold Pin for his success.

THE Cardiff Corporation Transport Tropical Fish Society, after a few meetings of lectures of how to set up tanks and maintain them up to a high standard, it was decided to hold the first fish show of the club, and the Dow Corning fish club were invited to take part. Dow Corning Club won first prize with a "Bumble-Bee Cat-fish," and Cretis had, second, third and fourth prizes.

THE Fleetwood and District A.S. has been reformed. The Committee are: President, Mr. David Sands, who is ex-secretary of the Catfish Ass. of Great Britain; vice-president, Mr. Barry Black, 123 Mount St. Fleetwood, who is going into business with Mr. Sands; chairman, Mr. Bernard Hill, 50 Limerick Road, Blackpool; secretary, Mr. Ben Frost, 103 Chatsworth Ave, Fleetwood; treasurer, Mrs. Sheila Frost, address as secretary; show secretary, Mrs. Doreen Moseley, 80 Forshaw Ave., Blackpool; ass. show secretary and

librarian, Mr. Graham Moseley, address as show secretary; social secretary, Mrs. Mary Hill, address as chairman. The aims of the society are to promote the keeping of tropical fish and be of service to the community of Fleetwood and District. They have a section for old age pensioners at reduced price. Even if they do not keep fish they or anybody else who is lonely can come to the meetings and enjoy a warm welcome, take part in social activities and be sure of making friends. They also intend to cater for and give help to the mentally handicapped, disabled, or anybody else who needs help, by their fishkeepers or not. Membership has grown from the Five Committee members to thirty-two in two months. For any further information please contact Mr. B. Frost, 103 Chatsworth Ave., Fleetwood, Lancashire FY7 8EW.

THE Cannock & District A.S. meets at 8.30 p.m. each first and third Tuesday every month, at the "Progressive Working Men's Club," Market Hall Street, Cannock. On 22nd August, the society were given a conducted tour of the Coxford Aerospace Museum. At their 4th September meeting, Mr. Geof. Halfpenny ably gave an illustrated talk on the Staffordshire Nature Conservation Trust, and he talked of the fish, reptiles, birds, animals and plants found in the area. On the 12th September, the adult members had an evening visit to the Highgate Brewery at Walsall, and this trip was highly enjoyable. The 2nd October found the society at the Castle Works at Stafford where they had been invited by Stafford Aquatic Society to hear Dr. D. M. Ford give his talk on the "Aquarian" range of products. At the 10th October meeting Mr. M. Ridgeway, area Inspector of the Severn-Trent Water Authority, gave his talk on the work being carried out by the Fisheries Department. He illustrated his talk with a slide show. Information will be gladly given from Mr. R. Potts, Hon. Secretary, 25 Oaks Drive, Cannock, Staffordshire WS11 1BU.

THE quarterly East Anglian Federated Aquarists show was held at the Scouts Hall, Arcade Street, Ipswich, when the following member clubs took part: Diss (D), Ely (E), Great Yarmouth (GY), Ipswich (I), King's Lynn (KL) and Thorpe and District (TD). The plaque for the best fish in show was awarded to Mr. N. Cobb, of Diss, with a Labeo bicolor (Red Tailed Black Shark).

Results of the classes: Barbs: 1, S. Turnbull (I); 2, N. Cobb (D); 3, Mr. Robson (TD). Characins: 1, 2 and 3, G. Drewry (GY). Cichlids: 1, D. Lacey (GY). Anguils: 1, N. Crowson (E); 2, H. Innton (I). Dwarf Cichlids: 1 and 3, C. Newman (I); 2, D. Newman (I); 4, N. Cobb (D). Rift Valley Cichlids: 1, N. Cobb (D); 2 and 3, J. Durrant (GY). Labyrinth: 1, G. Drewry (GY); 2, N. Cobb (D); 3, K. Appleton (TD). Toothcarps: 1, D. Newman (I); 2, F. Auffret (I). Catfish: 1 and 2, D. Newman (I); 3, B. Turnbull (I). Danios: 1, B. Turnbull (I); 2, K. Appleton (TD); 3, C. Newman (I). Loaches: 1, L. Durrant (GY); 2, D. G. Knights (GY); 3, Mr. and Mrs. Spence (TD). Rasboras: 1, N. Cobb (D); 2, S. Cowell (E); 3, Mrs. J. Crowson (E). A.O.V. Egglayers: 1 and 2, J. Ellingford (D); 3, N. Hume (D). Pairs Egglayers: 1, F. Auffret (I); 2, S. Cowell

(E); 3, D. Newman (I). Pairs Livebearers: 1, F. Auffret (I); 2, J. Ellingford (D). Labron: 1, N. Cobb (D); 2, D. Newman (I); 3, Mr. and Mrs. Spence (TD); 4, Mrs. J. Crowson (E). Guppies: 1, F. Auffret; 2, H. Innton (I); 3, K. Appleton (TD). Mollies: 1, N. Cobb (D); 2, N. Cobb (D); 3, N. P. Crowson (E). Platies: 1, A. Knights (GY); 2, L. Durrant (GY); 3, K. Appleton (TD). Swordtails: 1 and 3, G. Drewry (GY); 2, D. Knights (GY). Breeders: 1, S. Cowell (E); 2, J. Ellingford (D); 3, N. Hume (D); 4, J. Ellingford (D). Coldwater Single Tail: 1, K. Appleton (TD); 2, D. Wood (T); 3, K. Wood (T); 2, A. Wood (T); 3, A. Wood (T). A.O.V. Coldwater: 1, 2 and 3, K. Appleton (TD). Junior Tropical: 1, J. Norton; 2, Miss P. Crowson (E); 3, J. Norton (TD). Junior Goldwater: 1, V. Wood (T); 2 and 3, A. Colt (D).

THERE were 392 entries at the 17th Huddersfield Tropical Fish Society Open Show. Results: Guppy: 1, B. Banks (B.B.C. Thorne); 2, Mr. Barrett (B.B.C. Thorne); 3, Mr. and Mrs. Snowden (York and District). Molly: 1 and 2, T. Stanfield (Sherwood); 3, Mr. and Mrs. Hill (Barnsley). Swordtail: 1 and 3, S. Hall (Swillington); 2, Mr. and Mrs. Lake (South Humber-side). Platy: 1, G. Clark (B.B.C. Thorne); 2, Mr. and Mrs. Daines (Doncaster); 3, Mr. Barrett (B.B.C. Thorne). A.O.V. Livebearers: 1 and 3, T. and P. Busfield (Barnsley); 2, B. Banks (B.B.C. Thorne). Characins Large: 1, A. Frisby (Wike); 2, M. Metcalf (Wike); 3, Mr. and Mrs. Lake (South Humber-side). Characins Small: 1, Mr. and Mrs. Lake (South Humber-side); 2, J. Brittan (Morley); 3, G. Mitchell (Huddersfield T.F.S.). Barbs Small: 1, Mr. and Mrs. Kemp (Sheaf Valley); 2, Mr. and Mrs. Riley (Leeds Post Office); 3, M. and L. Price (Castleford). Barbs Large: 1, Mr. and Mrs. Kemp (Sheaf Valley); 2, Mr. and Mrs. Snowden (York and District); 3, A. Marples (Sherwood). Danios and Rasboras: 1, 2 and 3, Mr. and Mrs. Lake (South Humber-side). Egg Laying Toothcarp: 1, R. Brown (Morley); 2, G. Clarke (B.B.C. Thorne); 3, Mr. and Mrs. Lindall (York and District). Cichlids Angels: 1, B. Brook (Huddersfield T.F.S.); 2, Mr. and Mrs. Chadwick (Castleford); 3, Mrs. Tolhurst (Wike). Cichlids Dwarf: 1 and 2, M. and L. Price (Castleford); 3, B. Banks (B.B.C. Thorne). Large Cichlids: 1, Mr. and Mrs. Barlow (Sheaf Valley); 2, Mr. and Mrs. Snowden (York and District); 3, T. Harrison (Swillington). Rift Valley Cichlids: 1, A. Frisby (Wike); 2, M. A. Hollingsworth (Sherwood); 3, M. and L. Price (Castleford). Anabantids Small: 1, J. Brittan (Morley); 2, M. and L. Price (Castleford); 3, Mr. and Mrs. Lake (South Humber-side). Anabantids Fighters: 1, 2 and 3, Mrs. Gray (Hull). Anabantids Large: 1, Mr. and Mrs. Copley (Doncaster); 2, K. Lancashire (Doncaster); 3, Mr. Tooby (York and District). Catfish Corydoras and Brochis: 1, Mr. and Mrs. Barlow (Sheaf Valley); 2, D. Copsy (Morley); 3, M. and L. Price (Castleford). A.O.V. Catfish: 1, T. Stanfield (Sherwood); 2, A. Frisby (Wike); 3, Mr. and Mrs. Ashton (Wike). Loaches: 1, S. Sutton (Barnsley); 2, Mr. and Mrs. Riley (Leeds Post Office); 3, D. Marples (Sherwood). Sharks and Foxes: 1, Mrs. W. Culton (Worksop); 2, Mr. and Mrs. Hill (Barnsley); 3, Master C. Harrop (Huddersfield T.F.S.). A.O.V. Tropical: 1, Mr. and Mrs. Showdon (York and District); 2 and 3, T. Tolhurst (Wike). Breeders Livebearers A. and B.: 1, Mr. and Mrs. Hill (Barnsley); 2, B. Banks (B.B.C. Thorne); 3, Mr. and Mrs. Copley (Doncaster). Breeders Livebearers C. and D.: 1 and 3, T. and P. Busfield (Barnsley); 2, S. Sutton (Barnsley). Breeders Egglayers A. and B.: 1 and 2, Mr. and Mrs. Waller (Chesterfield); 3, B. Banks (B.B.C. Thorne). Breeders Egglayers C. and D.: 1, G. Clark (B.B.C. Thorne); 2, B. Banks (B.B.C. Thorne); 3, Mr. and Mrs. Copley (Doncaster). Pairs Livebearers: 1 and 2, T. and P. Busfield (Barnsley); 3, Mrs. Gray (Hull). Pairs Egglayers: 1, Mr. and Mrs. Lake (South Humber-side); 2, Mr. and Mrs. Tindall (York and District); 3, Mr. and Mrs.



Characin: 1, J. Lynch (Merseyside); 2, Mr. and Mrs. Walsh; 3, T. and J. Selby (Wythenshawe). Large Characins: 1 and 3, Mr. and Mrs. Walsh; 2, Mr. and Mrs. Muckle (Runcorn); Toothcarps: 1, S. Aincough (Bridgewater); 2 and 3, K. Buckley (Bridgewater). Rasboras: 1, Mr. and Mrs. Mulla; 2, S. Tomlinson (Macclesfield); 3, C. Bannon (Loyne). Danios: 1, J. Halsey (Darwen); 2, Mr. and Mrs. Baldwin; 3, T. Williams. Minnows: 1 and 2, Mr. and Mrs. Yates (Darwen); 3, C. Swallow (Macclesfield). Corydoras: 1 and 2, B. W. Carter; 3, B. and B. Durham (Longridge). Loaches: 1, Mr. and Mrs. Yates; 2, B. and B. Durham; 3, Mr. and Mrs. Baldwin. A.O.V. Catfish: 1, P. J. Harwood (Darwen); 2, Mr. and Mrs. Baldwin; 3, P. J. Harwood (Darwen). Sharks: 1, Mr. and Mrs. Yates; 2, Mr. and Mrs. Stevenson; 3, D. Garstang (Longridge). P. Poon: 1, Mr. and Mrs. Stevenson; 2, B. and W. Kenyon. Breeders, Egglayers (Eggs): 1, D. and G. Moseley (Flectwood); 2, K. Buckley; 3, B. and W. Kenyon. Breeders, Egglayers (Hard): 1, K. Buckley; 2, Mr. and Mrs. Yates; 3, B. and W. Kenyon. Breeders, Livebearers: 1, Mr. and Mrs. Baldwin; 2, J. Lynch; 3, Mr. and Mrs. A. Goddard (Macclesfield). Pairs, Egglayers: 1 and 3, K. Buckley; 2, M. Burgoyne (Bridgewater). Pairs Livebearers: 1, M. and N. Rimmer (Sandgrounders); 2, P. Kenyon; 3, A. Unsworth. A.O.V. Tropical: 1, Mr. and Mrs. Yates; 2, Mr. and Mrs. Muckle; 3, G. Lawless. Juniors, Livebearers: 1, S. Himsley (Bridgewater); 2, M. Allison; 3, M. Rimmer (Sandgrounders). Juniors, Egglayers: 1 and 3, Miss J. Baldwin (Sandgrounders); 2, G. Lawless. Single-tail Goldfish: 1, B. Frost; 2, R. Dingley (Heywood); 3, T. Williams. Double-tail Goldfish: 1, Mr. and Mrs. Harvey (Sandgrounders); 2, P. D. Lane (NGPA); 3, R. Dingley. A.O.V. Coldwater: 1, L. Pountain (Runcorn); 2, T. L. Penny (St. Helens); 3, D. Harvey (Sandgrounders). Breeders, Coldwater: 1 and 2, P. D. Lane. A.V. Marine: 1, G. Lawless; 2, M. Costes (St. Helens); 3, B. Frost. Mini Jars: 1 and 2, Mr. and Mrs. Stevenson; 3, B. and W. Kenyon. Best in Show: S. Aincough in Toothcarps with 80 pts. Total number of entries, 461.

**RESULTS of the 3rd show of the season of the Midland Aquarist League held at St. Christopher's school, Winsford Avenue, Allesley, Coventry: A.V. Rasboras: 1, B. Chittenden (Leamington); 2 and 3, Mr. and Mrs. Underwood (Unit 59); 4, F. and S. Whitehouse (Wolverhampton). Danio and W.C.M.M.: 1, R. Elliott (Corby); 2, F. and S. Whitehouse (Wolverhampton); 3, B. Chittenden (Leamington); 4, S.H.R. (Nuneaton). A.V. Guppy: 1, Mr. and Mrs. Ashfield (Leamington); 2, P. Wainmill (Wolverhampton); 3, Mr. and Mrs. Cox (Nuneaton); 4, J. and M. Rule (Rugby Fishkeepers). Swordtails and Platys: 1, B. Chittenden (Leamington); 2 and 3, E. and N. Hallam (Loughborough); 4, Mr. and Mrs. Underwood (Unit 59). A.V. Molly: 1, S.H.R. (Nuneaton) (Best-in-Show); 2, J. and M. Rule (Rugby Fishkeepers); 3, Mr. and Mrs. Underwood (Unit 59); 4, R. Rice (Coventry Pool). A.O.V. Livebearer: 1 and 3, S.H.R. (Nuneaton); 2, F. and S. Whitehouse (Wolverhampton); 4, F. and S. Whitehouse (Wolverhampton). Positions of the league after this show:—Wolverhampton A.S.: 94. Leamington and D.A.S.: 85. Nuneaton A.S.: 80. Corby and D.A.S.: 78. Unit 59: 66. Coventry Pool and A.S.: 62. Loughborough and D.A.S.: 53. Rugby Fishkeepers: 50. Individual Leader—F. and S. Whitehouse (Wolverhampton) 27pts. Second—R. Elliott (Corby) 26pts.**

**GREAT** strides have been made over the years to improve the Portsmouth A.S. annual exhibition presentation and this year the members excelled themselves; not only was the arrangement of the stands improved upon the individual stand lighting had been extended and all the displays were well headed by uniformly styled boards. Overall the show took five days to prepare. All the 500 odd tanks, angle stand assemblies, electrical equipment, gravel and all the accessories had

to be transported from the Portsmouth Community Centre to the Wesley Central Hall.

Incorporated into the amphibian and reptile block were the furnished aquaria. These were set up by the Portsmouth members on a competitive basis and judged accordingly by Jack Sillwell. Results: Adult Tropical: 1, Lesley Howard; 2, Tony Atkinson; 3, Graham Hardy; 4, John Sykes. Adult Coldwater: 1, Vernon Hunt; 2, Winifred Ryder; 3, John Sykes; 4, Bert Penhale. Junior Tropical: 1, David Pearce; 2, Stephen Hill; 3, Mark Newman; 4, David Whitcher. Junior Coldwater: 1, Kim Atkinson; 2, Nigel Forse; 3, Jason Atkinson; Joint 4, Amanda and Andrew Howard.

The Amphibian and Reptile stand was better than ever before with several new species some of which had only recently been imported by John Howard from North America. Most of the exhibits were supplied by Stephen Crabtree and John Howard but the display was further augmented with specimens supplied by David and Stephen Hill, Mark Wilkinson, Peter Carpenter and Michel Piasco. There were seven species of snake including the garter snake from North America; a Haitian boa; a rainbow Boa from South America; a boa constrictor from the Argentine and of course Monty the Indian rock python kindly supplied by Leroy Pet Stores. Other specimens included poison frogs from South America; tree frogs from North America; oak toads from North America; anolis lizards; berber skinks; diamond back and painted terrapins. One particularly outstanding species was a worm-like, legless lizard, *Nectocacilia haydee* from Venezuela which feeds on small fishes, worms and aquatic insects. Another unique species of amphibian was the African clawed toad which never leaves the water.

At Vernon Hunt's North American fish stand. There were the usual selection of sunfishes and minnows plus new fishes which included the banded sunfish, *Enneacanthus obesus*; pirat perch, *Aphredoderus sayanus*; swamp darter, *Etheostoma uniflorum*; Red shiner, *Notropis lutrensis*; bridled shiner, *Notropis bifrenatus*; lake chubsucker, *Erimyzon succetta* and an unidentified gambusia from Georgia. Adjoining this section was a small selection of Japanese fishes.

Vernon Hunt was also responsible for the Water Life stand. Here were to be seen the usual denizens of pond and stream. The most spectacular species were the great diving beetles, dragonfly larvae and great crested newt tadpoles. Also included were three species of crayfish, two of them North American and the third British.

The Cichlid stand was again much in evidence as last year with its spectacular specimens which are always very popular with the general public. This display comprised a dazzling array of awe-inspiring, highly coloured cichlids from South America and Africa. All these fishes were kindly loaned by the Gosport and District Aquarist Society.

There were two livebearer displays adjoining one another and they were set up by Bill Crookford and Bert Smith of Petersfield. One display represented the Federation of Guppy Breeders Societies, South Hants Group and the other, The Southern Livebearers Aquatic Group. There was a good selection of guppies on one side of the assembly and on the other a good variety of A.O.S. livebearers, some of which are rarely seen. The new *Ameca splendens* was in evidence along with such fishes as *Xiphophorus milleri* and *Goodea striparia*. Other fishes included the blue limo, *Poecilia melanogaster*, black swordtail, *monstrum swordtail* and others.

Stephen Morris and John Sykes were responsible for the Anabantid Stand. Represented were most of the well-known gouramis, including the *Daphnognathus gurnamii*. One pair of fishes exhibited, the Chinese paradise fish, *Macropodus opercularis* built a bubble nest and successfully spawned.

The display of barbs, danios, minnows and rasboras was set up by Dudley Forse, the show manager. Most of the fishes he was able to supply himself and Adrian Page was at hand to make up the number.

The Characin Stand was the responsibility of Colin Forse who supplied all the different species the most prominent being, of course, a red parana, *Serrasalmo nattereri*. Colin's young brother, thirteen year old Nigel, arranged and prepared a very complex and impressive display of fish foods and allied accessories for the aquarium. Also on display was the Portsmouth Aquarist Society tabless which was placed second in the Aquarium Exhibition at the Alexandra Palace in London.

The Native Fish Stand was set up by Wally Ryder who, along with John Howard, supplied a selection of the better known inhabitants of our rivers and ponds. Further to the easily obtainable coldwater fishes was, of course, the Goldfish Stand. Ted Binstead made a great effort to render this display more than just presentable.

The Native Marine Stand, prepared by Adrian Page, ably assisted by John Sykes, displayed many of the denizens of our shores and rock pools. One "first" in the display was a tank of young cuttlefish; quite fascinating little creatures they were and certainly eye-catching to the general public.

Adrian Page was also responsible for a couple of tropical marine tanks in which the most spectacular fish was a moray eel and a research stand which featured a number of books on the subject of fish diseases and their cures with appropriate remedies on show as well.

Overall, the show was a good one and in many ways an improvement on exhibitions held in the past. The presentation was better; the stands having their own individual lighting and heading boards. On the other hand it could have been a disaster as a result of vandalism and theft. Three highly valued striped salamanders were stolen along with an aquarium. A plastic pond was broken, resulting in a severe flooding of the hall floor. The police were called in because of the theft.

#### CHANGE OF SECRETARY

**Catfish Association of Great Britain:** Secretary, Mr. Paul Miller, 89 Cedar Avenue, Durrington, Worthing, Sussex.

#### SOCIETY RE-FORMED

**The Fleetwood & District A.S.** has been re-formed. All mail for the society to the secretary, B. Frost, 103 Chatsworth Avenue, Fleetwood, Lancs. FY7 8BN.

#### CALENDAR

**4th November:** Halifax A.S. Open Show at the Forest Cottage Community Centre, Cousins Lane, Ilkley, Halifax. Schedules sent only on request with s.a.c. to D. Shields, Cobblestones, Gaiety, King's Cross, Halifax or ring for details Halifax 66116.

**11th November:** Bradford and District A.S. open show at Treble Hill, Worsgate, Bradford. Details from Show Secretary, Mr. R. Stanfield, Station House, Leeds Road, Shipley. (Tel: Bradford 595097).

**11th November:** Walthamstow and District A.S. Annual Open Show at Mission Grove School Annex, Warner Road, Walthamstow, London E17. F.B.A.S. rules; 32 classes.

**11th November:** Walthamstow & District open show. Further details from Show Secretary, Stan Furrisedown, 79 Hoppers Road, Winchmore Hill N.21.

**17th November:** Goldfish Society of Great Britain general meeting at Conway Hall, Red Lion Square, Holborn, London.

**17th November:** Catfish Association of Great Britain convention at Aylward Lower School, Windmill Road, Edmonton, London N.18; at 2 p.m. Tickets from PRO, John Carpenter, 10 Thornbank Close, Stanwell Moor, Middx.

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**9th March:** Brighton and Southern A.S. open show at Portslade Town Hall. Further details from T. Ramshaw, 26 Wilmet Road, Shoreham (Tel: Shoreham 62630).

**21st September:** Tonbridge and District A.S. open show at Hadlow Community Centre, Hadlow, Kent. Schedules from Mrs. D. Feast, Show Secretary, c/o 6 Albert Road, Tonbridge, Kent.