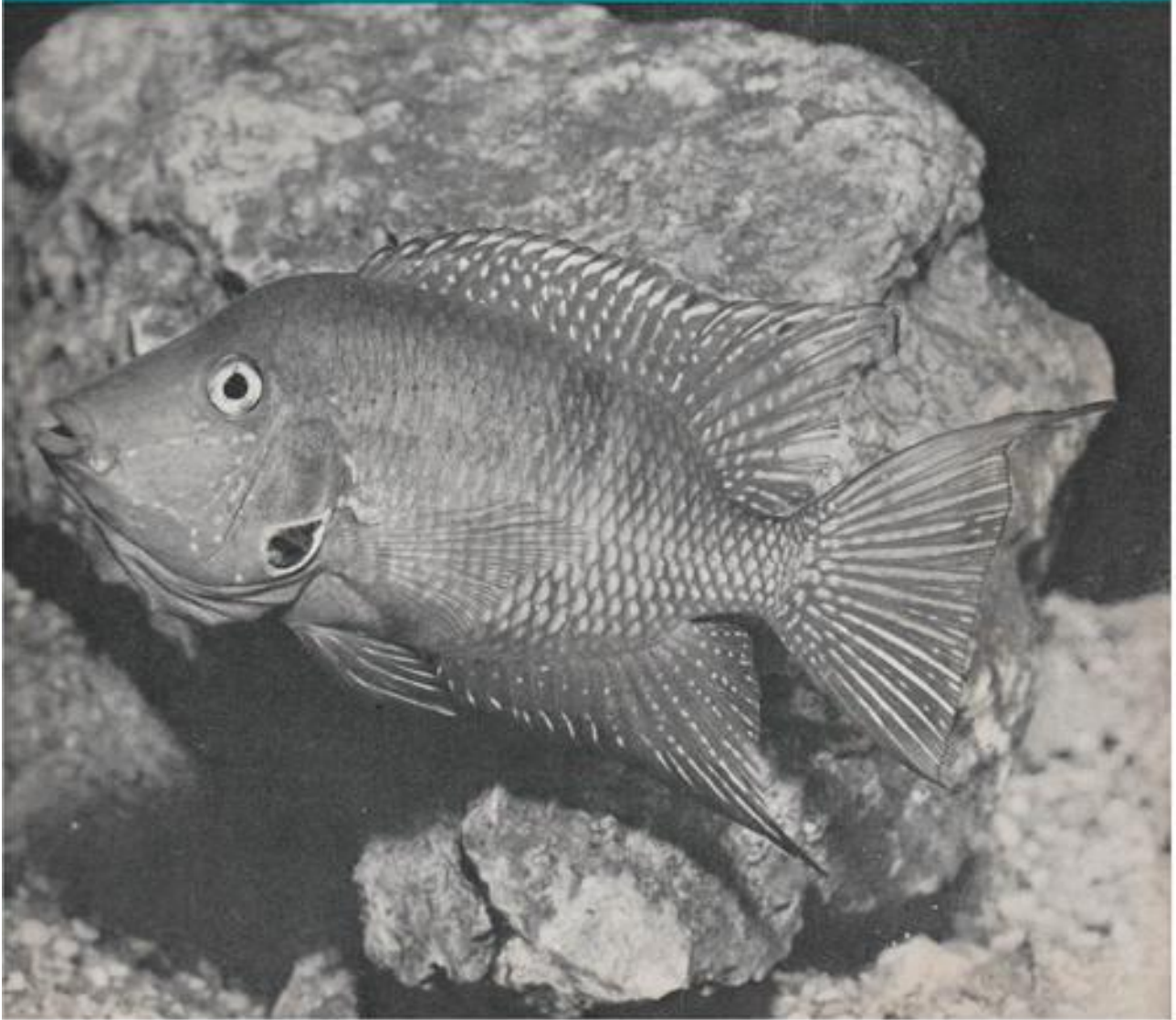


1988

monthly

*the*  
***Aquarist***  
*and Pondkeeper*



# the Aquarist

and Pondkeeper

Printed by Buckley Press  
THE BUTTS . HALF ACRE  
BRENTFORD . MIDDLESEX.  
Telephone: 01-560 6221.

Subscription Rates The Aquarist will be sent post free  
for one year to any address for  
£1 15s. 0d. Half-yearly 17s. 6d.

MSS. or prints unaccompanied by a  
stamped addressed envelope cannot be returned and no re-  
sponsibility is accepted for contributions submitted.



Founded 1924  
as 'The Amateur Aquarist'  
Vol. XXXIV No. 7, 1969

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*Cichlasoma meeki*

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The Editor accepts no responsibility for views expressed by  
contributors.

Editor: Laurence E. Perkins

October, 1969

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# PORCUPINE FISH



By Stan Nelson

MY PORCUPINES were caught in Barbados and brought home by my son in a plastic tank in his cabin and had eaten nothing for a week. They are so unusual-looking, not at all like any fish I had ever seen, that I wondered what the heck I'd got!

I can best describe them as being pear-shaped, but flat on top and underneath. The top half is mottled brown, but in one case was nearer red than brown, and the underside is white. The eyes are absolutely fascinating, really beautiful large eyes reflecting light like jewels, appearing sometimes green, sometimes blue. They have the ability to move independently and both can be focussed forward to look at you directly through the front glass of the aquarium. With these big baby-blue eyes looking at you and the mouth set in a permanent smile, the effect is almost human.

The large pectoral fins set back almost to the centre of the body are moving constantly with an undulating motion. One little boy watching them thought that they were wings. The gills are set close to the base of the pectoral fins, like openings in the side of the fish. With the fishes breathing there is a constant open-and-shut movement of the gills. Water drawn in through the mouth is expelled through the gill and sometimes this has an odd effect; after feeding on occasions a cloud of food will appear on either side of the fish. It looks like a trick rather like a man blowing smoke out of his ears! You should see the small fish in the tank snapping up this fine food!

The dorsal and anal fins set back on the pointed end of the fish close to the caudal fin are both in constant motion and appear to be the driving force. The caudal is used as a rudder and is bent round sometimes so far that the fish appears to have no tail! From this very inadequate driving force plus an ungainly shape you can gather that this fish is a very poor swimmer.

All of the body is covered with spines folded back. These are the fish's defence for when it is in real trouble it swallows water, swells to the shape of a balloon, and all the spines stick out, hence its name: Porcupine Fish. The spines are actually more pointed than the diagram shows.

The fish does not swell up in this manner unless com-



pelled to, or unless something is wrong in the tank. I'll explain that further; on the way over to me, my son had them in his cabin, and to try to get them to perform he held them lightly against the side of the tank with a rod. At first they obliged but once they knew no harm was coming to them they would not do so. Similarly, being lifted out of the water with a net produced results but soon they allowed themselves to be lifted without protest.

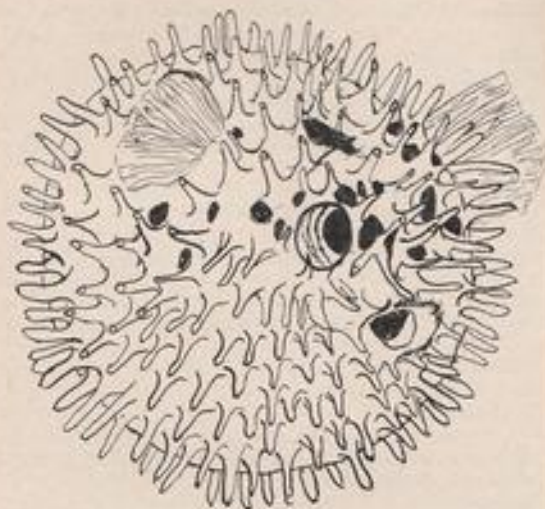
In the tank no fish seems to bother them; they feel so secure in their defence that they even move cheekily over the poisonous spines of the scorpion fish. However, I had one in a tank with a turtle for a while and only once he grabbed the fish by the caudal peduncle and hauled it backwards a foot. When it went up like a balloon he soon let go!

If the water condition is wrong, or if there is oodinium present they show it by blowing up in protest. The water condition with the turtle was often wrong, it being a big animal. The water turned yellow and even Eheim resins couldn't cope with the pollution. The porcupine showed his distaste for this in the only way he knew. Fortunately, I was able to pass the turtle on. Similarly an irritation like oodinium produces the same result.

The fish has an enormous appetite and will eat until the stomach is really distended. Maybe they can store food in this way, for on odd occasions I've seen them turn out a worm or two that they had eaten some time ago and then proceed to re-swallow it.

The fish really is a messy eater, it will grab its food, spit it out, catch it again, spit it out again and eventually eat it, if some other fish hasn't beaten it to it. Small fish enjoy this for the porcupine kindly chops the food to size for them. Earthworms, pieces of fish, cockles and shrimps are enjoyed. When I approach the tank the porcupine swims excitedly backwards and forwards across the surface of the water and with his mouth opening and shutting expectantly, he couldn't say more plainly "Where's the grub?"

They grow quite big, up to 3 feet apparently and large specimens are sold by the natives blown up, hollowed out, varnished and used to decorate bars, etc. They are easy



to catch at night with a net as they have a habit of surfacing at that time. Their teeth are very strong and natives, for fun, will hold a branch by them and they will bite it clean through.

These fish need a well-aerated tank, and actually enjoy staying in the airstream coming out covered with bubbles. Without this aeration they go very languid.

One more thing, you may have thought that the archer fish is the only one to blow jets of water at flies. The porcupine will blow a jet of water at a piece of food if it is left on the edge of the tanks and if you are slow dropping food in with your hand, you may well be on the receiving end of a jet of water yourself! If you want to see them perform in this way, just place some food on the glass cover of the tank when they are hungry and they will oblige by trying to shoot it down from underneath.

May I point out to anyone interested in keeping marines, that the International Marine Study Society always welcome new members who should apply to the general secretary, who is Terry Hall of 49 Broadhurst Gardens, Hampstead, London, N.W.6.

October, 1969



SATURDAY AND SUNDAY  
OCTOBER 18th-19th 1969



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the **BIGGEST** event in the aquarists’  
calendar.

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**BRITISH AQUARISTS’ FESTIVAL**  
**BELLE VUE, MANCHESTER**

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# FROM A NATURALIST'S NOTEBOOK

## VANISHING FISHES AND WATER-PLANTS

By Eric Hardy

---

A GREAT DEAL of fund-raising propaganda is being pumped out about birds and beasts on the precipice of extinction, directed against the legacies and cheque-books of rich widows, and not without some concern for maintaining the numerous new jobs created from such funds. The unfortunate imbalance is that less photogenic species (the wild animals, I mean, not the retired officers from the Forces that suddenly develop an interest in conservation unnoticed before) tend to miss the money as well as the attention.

Consider fishes. Nothing much has been done to save dwindling British species like the burbot, by increasing suitable habitats. It has no sporting value that is the main concern of the Freshwater Fish Preservation League, and none of the high fishing fees that lay behind the recent concern for salmon-stocks when riparian owners learned of the Greenland fishery. The dwindling freshwater spangling

in Cheshire's Rostherne Mere are now owned by the Nature Conservancy. River authorities have successfully introduced the barbel into the Severn and done their best (without success) to exterminate the grayling from the Eden. Incidentally, the alien grayling, apparently introduced by the monks to Ribble, Hodder and Eden, is absent from the other major rivers in north-west England, Derwent, Kent, and Lune.

Writing recently in the New Zealand journal of marine and freshwater research, W. Skrzynski finds it is unlikely that the Canterbury mudfish, *Galaxias burrowsius*, can survive the present drainage of its boggy haunts on the Canterbury Plain. Once common, this highly interesting fish has been almost eliminated without any attention to save it during the costly campaigns to introduce salmon and trout, and world-wide publicity to save the Notornis bird. The country has been flooded with red deer and alien animals while its native evolution has been largely left to vanish.

*Galaxias*, surviving long periods in damp earth when its isolated waterways dried up almost annually, had no competition from any other fish, nor was it preyed upon by an serious predator. However, such waters have almost been eradicated from the Canterbury Plain by connecting them by artificial channels to the permanent river systems, or draining them away altogether. A fully aquatic habitat doesn't seem to suit the Canterbury mudfish so well as an infrequent one—spending summer in creeks or pools and "hibernating" winter in mud—one which always returns, some day. Now it will never return, unless a last minute reversal of development plans takes place, and that's unlikely.

However, before the war, New Zealand's primitive, scaleless mud-fishes were then reputed to be on the brink of extinction. One in particular, *Neochanna apoda*, had formerly flourished around Hokitika, Feilding and Rangitikei. Living like lung-fish, specimens used to be found aestivating in heavy clay five or six feet below the surface, and others beneath living trees of white pine. Often they follow the channel left by some decaying root. The eggs hatch in September or October, and the fish grow to about 8 inches. Clearing the forests and draining the swamps in the inevitable path of agriculture and industry reduced the *Galaxiidae* to their present limited distribution.

Mapping the range of the long-bodied, pike-like mudfish



*Azolla filiculoides*



Great Bladderwort (*Utricularia vulgaris*)

of the *Galaxidae* finds them in all sub-arctic lands bordering the southern ocean: New Zealand, Australia, South Africa and the Magellan area, evidence of either a common marine origin or a continental drift from a common land-mass. In winter, *G. findlayi* becomes frozen in its New Zealand ponds, *G. coxi* can cling to rocks and thus survive torrential streams while *G. attenuatus* migrates down to the sea to lay its eggs in salt water during the warm January or February. Shoals of young *attenuatus* migrate back up the rivers in April or May, like eelers ascending our western rivers. New Zealand of course has its own true eels, its commonest freshwater fishes, namely the long-finned silver-grey *Anguilla aucklandi* in rapid rivers, and the short-finned *australis* of calmer lakes and slower streams.

The fisheries officials of the former English Mandate in Palestine, always jealous of the more scientifically-qualified Jewish Agency then operating as a parallel research and development organisation, raised great concern to me over what they considered the imminent extermination of the native *Tilapia galalaea*, and other mouth-breeding cichlids in Lake Huleh and Galilee, by the expansion plans for Jewish carp-fisheries. Nearly a quarter of a century afterwards, unappetising, tasteless *Tilapia* are still numerous enough to monopolise the menu for bible-hungry tourists at the lakeside hotels happy to feed as the Disciples fed. Fish-culturalists in Israel rear in ponds the fry of the large native grey mullet, *Migil capbalus*, which inhabits their Mediterranean streams. It accepts the same freshwater habitat as the carp. Altogether, 6 species of grey mullet inhabit their Mediterranean shore and enter their streams. Israeli conservation laws prevent the taking of grey mullets less than 16 cm. long, without special permit.

Botanists now show more practical concern for vanishing water-plants than they did before 1950. It is reported that 35 species of semi-aquatic bog-plants like round-leaved sundew, large bittercress, water-purslane and marsh-St. John's wort have become extinct in Cambridgeshire through drainage of the fens, but only two of the fully aquatic pond or lake plants. Round-leaved sundew still grows on industrial Merseyside, where I recently counted 422 of its glistening red rosettes whose insect-catching leaves made up for the deficiency of nitrogenous food in

only eight peaty yards of wiral-down the footpath opposite Heatherlands, at Thurstaston, then a short way along a left-hand track near the far end of the birch copse, a track marked by distant cotton-grass. It is still plentiful in Westmorland, whence I was able to exhibit specimens from Place Fell, flowering and fruiting in sphagnum, at a recent meeting of Merseyside Aquarist Society.

At Barton Broad, in Norfolk, in mid-July, I found the big dyke below Catfield Hall—a left turn where the woodland track emerges after leaving the left-hand end of the lane below Fenside—yellow with flowers of great bladderwort, another carnivorous but fully aquatic plant. Catfield dyke is a haunt of floating fern *Azolla filiculoides*. The uncommon alga, *Chara hispida*, is reported still abundant in Hell Kettles pond near Darlington, after 200 years there. This site is detailed in R. T. Manson's book *Zig Zag Rambblings of a Naturalist* (1898). A relative stonecress, *Nitellopsis obtusa*, is another of Britain's rarest aquatics, found where I visited the bays and backwaters of Norfolk's Hickling Broad below decoy-farm, off Decoy Lane (below Rookery Farm, below Catfield Common). There it is called pochard-weed. I've seen some magnificent royal fern on the mainly dry, sweetgale bog on the left side of the bottom of the Fenside lane-end-track to the east bank of Barton Broad.

The 1952 hydro-electric scheme seems to have exterminated the only British plants of slender bogrush, *Scheuchzeria ferruginea* from the peaty banks of Loch Tummach. In the canals and lakes of north Shropshire near Whinall, and in Northumberland, the rare dwarf yellow water-lily *Nuphar pumila* is being crowded out by its partially fertile and abundant hybrid with the common *lutea*. The three-lobed water-crowfoot, *Ranunculus tripartitus*, still inhabiting the lynau of west and central Anglesey and Lenoemand's water-crowfoot, still in Cheshire's Hatchmere, etc., are now extinct in south-east England.

These aren't showy plants like flowering rush, arrowhead, water-violet and the water-lilies which have been collected out of most of their haunts on the edge of towns by water-gardeners and plant-dealers. The rarer aquatics usually disappear from collecting by botanical students (like great bladderwort from the Rufford station trenches in south Lancashire), drainage, pond-filling, pollution or sheer lack of sufficient glamour like the birds and beasts in the conservation stakes.

## FIND THE FISH

The first is in STREAM and also in BROOK  
 The second is in PIGEON but not in ROOK  
 The third is in VEND but not found in SELL  
 The fourth is in UTTER but not in TELL  
 The fifth is in APPLE and also in PLUM  
 The sixth is in GLUE and also in GUM  
 The seventh is in POST but not found in MAIL  
 The eighth is in WORM but not in SNAIL  
 The ninth is in MIST but not found in FOG  
 The tenth is in SANDAL and also in CLOG  
 The eleventh is in EAST and also in WEST  
 The twelfth is in WORST and also in BEST  
 The last is found in MAID MARION

Answer on page 209

# OUR EXPERTS' ANSWERS TO YOUR QUERIES

## COLDWATER QUERIES

By A. Boarder

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Please enclose a stamped addressed envelope when writing to our experts or to the Editor for advice on your problems.

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**I propose to build a fish-house for coldwater fish and wish to have a number of tanks. What thickness of concrete will be necessary for the floor to hold the tanks and what timber shall I use to hold the tanks?**

Two inches thick should be all right for your fish-house floor but you can use old paving stones which could be easier to lay. You will do better with metal frames for your stands than wooden ones which could rot.

**How long should one quarantine fish, as I have some with white spot and wish to get rid of it soon?**

The time taken for the development of the white spot parasites depends on the warmth of the water. The warmer it is the sooner will the pests leave the fish to encyst which can be washed away. I think that three weeks' quarantine and treatment will be enough, especially if the temperature of the water is not less than 70°F.

**Can I winter comets, goldfish and moors in an unheated fishhouse?**

You should be able to do this quite safely, but if a very severe freeze-up occurs, you could get trouble with the tanks freezing up and breaking the glass. A small oil heater could keep the frost out and need only be used in very hard weather.

**I am living near the sea and can get plenty of small shrimp-like creatures. Can I feed these to my pond fish with safety?**

These creatures should make good food for your fish. The only risk appears to be from the salt, which if too much remains in the water could in time cause trouble. A little salt can be beneficial, but too much could be the opposite.

**Can I breed golden orfe in a 3 ft. tank?**

It is very doubtful if you could succeed in such a tank. Orfe should have plenty of swimming space and they also must have a very well oxygenated water to encourage spawning.

**I have heard orfe described as suicide fish as they can jump out of a tank. Is there any way to build a pond so that they cannot jump out?**

I do not think that you need have any fear that the orfe will jump out of a pond. Providing it is large enough there is not much likelihood of this happening. I have kept orfe

for many years and they never made any attempt to jump out. The water would have to be pure or they might try to jump out.

**I have two large tench in my pond which are covered with white spot disease. Is there a simple way of getting rid of the disease?**

I know of no simple way of ridding the tench of the disease whilst still in the pond. There is nothing you could add to the pond water which would be strong enough to kill the pests on the fish without actually killing the tench as well. The surest way to get rid of the parasites is to put them in a large container and then change the water and clean the tank every day for a fortnight.

**Some of my goldfish in the pond have small white blobs on them and some have a sore. What is this and how can it be cured?**

By the size of the marks on your fish it is probable that the trouble is fish lice, *Argulus*. These can be picked off with tweezers and the wound dabbed with T.C.P. at a fair strength but only touch the wound. A salt bath might also help to clear the trouble up, once the pests have been removed, to prevent the wounds causing more trouble.

**How long can fish lice survive in a pond when all the fish have been removed?**

If any eggs had been laid they could hatch out in a week or two according to the warmth of the pond water. It is possible perhaps for the pests to live on frogs or snails which were in the water but I do not think that this is likely.

**I am having trouble with my white worm cultures. There are a large number of small black flies coming from the culture when the glass is lifted. What are they and how can I get rid of them?**

The flies are probably the Sciara fly which are very small, black and can run about very quickly. They lay their eggs in damp matter such as the medium in which you cultivate the worms. They are not likely to do any harm other than to be a nuisance. I often get a spate of these flies and encourage spiders to live near my worm boxes. You could also try one of the paper D.D.T. hangers to keep near the worm box to kill the flies when they are free flying. A change to a completely fresh box and culture could help to get rid of the flies. The worms could be caught from the old medium by warming the box.

**I have a pond with a waterfall but the water in the pond looks very unpleasant and murky. Is there any way to improve conditions?**



As you pond is freshly constructed it is possible that the water will clear by itself once the water lily leaves grow over a large part of the surface. Also if you can incorporate a small pool in your waterfall and place an open-type bag filled with broken charcoal in it, this will tend to clear the water as it runs over the fall. If you look at the water beneath the water lily leaves you will see that there is less green algae there than in the open parts of the pond. This is because the algae will only thrive in a very light position, and so as the water plant life increases so will the green algae decrease in quantity.

**Would you please advise me on the best under-gravel compost for my coldwater tank?**

If you can incorporate a little potting compost under the gravel this will help the plants to get established and to get some nourishment. Once the tank has been running for some time the droppings from the fish will supply some food for the plants but I am sure that the extra nourishment at the beginning will be of great advantage to the plants. Do not over-do this base compost however and only put any near the back of the tank, say up to an inch or so deep, but none near the front.

**We have a comet goldfish which has been in ill-health but having recovered after treatment it is now in a salt bath. We are going on holiday and wonder if we should lessen the salt content?**

I think that the salt content should be reduced before you go away. Sometimes a salt water tank will turn foul for no apparent reason and if this happened whilst you were away the fish could die. You should not allow anyone to feed the fish during the period of absence.

**I am interested in breeding snails and have two kinds. I have heard that snails have no sex and wondered if all snails lay eggs and if so how they are fertilised?**

Snails have sex and as a matter of fact they have both male and female sex organs. They can therefore fertilise eggs of another snail and also be fertilised by that snail at the same time. Most snails lay eggs but the ones known as *Viviparus viviparus* are live bearers.

**I have had some spawnings from my goldfish and although many fry have hatched none have survived. I fed with infusoria and also boiled oatmeal rinsed through a cloth. Why have I lost all the fry?**

It may be that the water you used may not suit the fry or that the infusoria and meal water did not agree with the fry but fouled the water. Why not discontinue your method of feeding any future fry and turn to Liquifry. I never use anything else for first feeds and have had complete success at rearing.

**A pond is so completely covered by the leaves of *Nuphar luteum*, that only carp and tench can survive. How can the pond be cleared of the plants?**

There is nothing you can add to the pond to kill the plants without killing the fish. Paraquat will kill water plants but it will also kill any other life in the water. The best way to, at least, reduce the plants would be to throw in a three-pronged grab on a rope and so drag out most of the roots and tubers of the plants.

## TROPICAL QUERIES

**What is a fingerfish?**

Fingerfish is a popular name for *Monodactylus sebas*, a close relative of the better known and more disc-shaped *Monodactylus argenteus* or Malayan angel fish. *M. sebas* is more sensitive to the quality of the water, and is therefore more difficult to keep in captivity, than is *M. argenteus*.

**I bought a moonlight and an opaline gourami some seven months ago. The moonlight gourami has grown to about twice its original size, but the opaline gourami has hardly grown at all. What is the explanation for this?**

First of all, you must face up to the fact that the moonlight gourami is, usually, the faster growing and larger growing of the two. Further, it often happens that when two gouramis are placed together one will keep chasing after the other and drive it away from food. Fear of attack and insufficient nourishment will keep almost any fish of any species small. If you separate your gouramis we think you will find a marked improvement all round.

**I have been told that the mudskipper must have live food if it is to stay alive. Is this true?**

We have seen mudskippers grabbing at a well-known German flake food scattered over a piece of stone and apparently enjoying it. There is no question that not a few mudskippers can be trained to accept dried or dead (flesh) food.

**I should like to know the scientific name of the yellowtail rasbora. Also, its maximum size and requirements in the tropical aquarium.**

There are two rasboras popularly known as yellowtail rasboras. One is *R. danconensis* and the other is *R. argyretainia*. Both have plenty of yellow in the caudal fin. But because *R. danconensis* is not so frequently imported it follows that it is not so well known. Both species reach a length of 6 in. and flourish well at a temperature in the middle seventies (°F) and eat any live or dried foods.

**Would the fish called *Garra nasutus* be all right in my community tank?**

This uncommon cyprinid is quite inoffensive but grows to a length of about 6 in. Bear this in mind if your community tank is on the small side and is not altogether poor in population.

**Is it possible to keep brine shrimps alive over a few weeks and grow them on in this time to an appreciable size?**

It is possible to do this if you increase the salinity of the water and keep it well aerated by an air-pump. Among the foods to grow on the shrimps are free-swimming algae (green water) and drops of yeast infusion.

**Can *Hemigrammus nana* be bred in the aquarium?**

*H. nana* will breed quite freely if conditions are right and already there is an improved form of the brownish type on the market. This brighter coloured fish was produced in America.

Continued on page 201



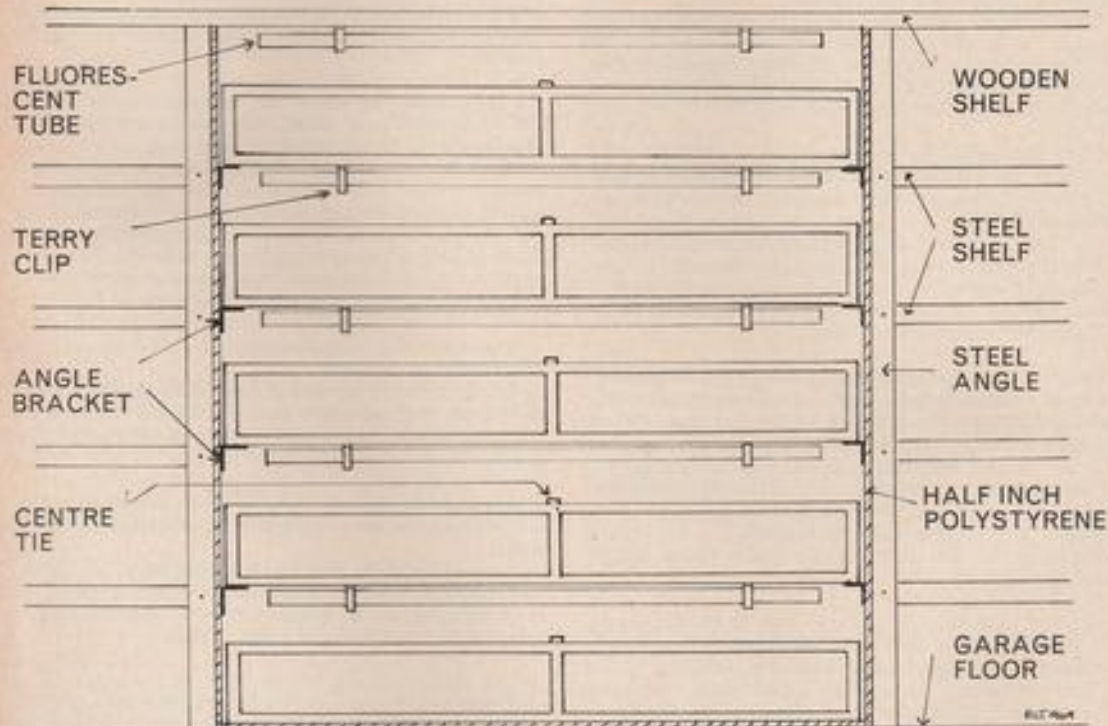
# A BREEDING ASSEMBLY FOR THE GARAGE

By Ralph C. Taylor, C.Eng. M.I.E.E.

THE PROBLEM which always arises sooner or later is where to put some more tanks. Often the garage is rejected on two counts: too narrow and too cold; both of these snags can be overcome to a great extent as I have proved.

The width can, of course, only be reduced by using narrow tanks which can be bought if only very small tanks are required but in my case I wanted 5 or 10 gallon units. I decided to make my own frames about 5 ft. 6 ins. long, 8 ins. deep and 6 ins. wide; with one at floor level and another at eye level it was possible to fit five such tanks by the garage wall. The next step was to buy some 1 in.  $\times$   $\frac{1}{2}$  in.  $\times$   $\frac{1}{4}$  in. angle iron, borrow a small electric welding set and, after a little practice, five satisfactory frames were produced.

The top four tanks and the shelf above have Terry clips fitted underneath to hold fluorescent tubes. A 1 in.  $\times$   $\frac{1}{2}$  in. flat strip iron was welded across the centre at the bottom, back and front and a 1 in.  $\times$   $\frac{1}{4}$  in. strip of Tufnol plastic was bolted across the centre at the top. A small slot was cut at each end at the top to enable the glass to enter the frame; these slots were useful for air lines and heater cables. The frames were given an undercoat and one coat of good gloss paint before glazing. Normal aquarium putty was used but the glass was wiped with a rag soaked in boiled linseed oil where it was in contact with the putty. This makes a mess on the glass but it can be readily removed after a week or two with a razor-blade scraper and is a good insurance against leaks.



A BREEDING ASSEMBLY FOR THE GARAGE. DOORS NOT SHOWN.

After glazing another coat of paint was applied. Cover-glasses were fitted to each half of the tanks using suitable clips to ensure drainage of condensation, the edges of glass was arised (i.e., the sharp edges were taken off), by rubbing the glass at an angle over a piece of emery cloth stuck to a board. Finally, the edges of the cover glasses were bound passe-partout fashion with plastic tape taking care not to stretch it as it was applied.

The next problem was to heat-insulate the assembly. I decided to use  $\frac{1}{2}$  in. expanded polystyrene so pieces of this were cut to fit under the bottom tank and over the area of the wall. Support for the tanks was arranged by fitting 6 in. wide steel shelf units each end of the tanks with a timber shelf joining the top and 5 x 6 in. lengths of angle were bolted to each to suit the desired tank heights. For stability the tops of the shelf units were screwed to the wall. Polystyrene insulation was fitted to each tank-end. Two lightweight doors were made from  $\frac{1}{2}$  in. hardboard with 2 in. x  $\frac{1}{2}$  in. framing glued and pinned on; the space inside the frame was filled with  $\frac{1}{2}$  in. polystyrene glued on. Make sure that the glue does not dissolve the polystyrene. Finally, 5 ft. 80 watt fluorescent tubes were installed in the Terry clips. The

tubes are generally run for 8 hours each day at 40 watts. No doubt it would be simpler to use 4 ft. 40 watt tubes run normally but several secondhand 5 ft. tubes were available so as these gave too much light I reduced the load to 40 watts each.

Due to the canal-like form of the tanks one thermostat was fitted at the centre of each tank which controls two 50 watt heaters placed at the centre of each half. This arrangement is convenient for my normal use of the tanks with a centre celluloid partition sprung into place.

The assembly only takes just over 7 in. of the width of my garage and I have 10 tanks and several useful shelves. In nearly two years' use no leaks or other problems have arisen and the tanks have been very successful for breeding and plant propagation.

The only alteration I would make if starting the job again would be to apply white plastic tape round the tops of the tanks after painting. I now do this on any new tanks or when repainting, as it gives very long life protection if applied carefully without any tension. This tip should be of interest to the keepers of tropical marines as well as for protection of the cheap bent sheet metal type of tank.

## TROPICAL QUERIES continued from page 196

Please give me some information on the care of *Julidochromis ornatus*.

This African lake cichlid needs a tank to itself filled with hard and alkaline water. A temperature in the middle to upper seventies (°F) suits it best. Live food such as tiny worms and aquatic larvae are recommended.

Quite a few plants and fishes have the word "somphongs" in their scientific names. What does "somphongs" stand for?

Mr. Somphongs Lck-Aree is a distinguished Thai collector of plants and fishes. Many of his discoveries in Thailand have been named after him.

I should like to keep a common weatherfish (*Misgurnus anguillicaudatus*). What size tank, temperature range and food would this fish need?

*M. anguillicaudatus* can reach a length of 8 in. so it would be advisable to start it off in a 18 in. by 10 in. by 10 in. tank.

Ordinary room temperature is as good as any. Bits of meat, white fish, and earthworms are acceptable food.

Is it really true that a poison is given out by certain water plants, and that this poison will kill fish?

Reliable authorities state that *Limnophila indica*, a species of "Ambulia," secretes a poison in its leaves and stems. Damage to these releases it into the water. All the same, few stems of this plant, damaged or not, will not kill fish unless the tank is very small and the fish are delicate.

Could I use well-washed coal dust in a filter?  
Well-washed coal dust or slack would certainly not result in the fishes coming to any harm that we know of, and it would certainly trap suspended sediment in the water. All the same, slack would not do the job of cleaning the water nearly so well as the prepared carbon or charcoal sold by dealers.

## SURPRISE SPAWNING OF RAINBOWS

MACCULLOCHI By J. Boardman

HAVING DECIDED to spawn a pair of *Aphyosemion australe*, I prepared the usual 24 in. x 12 in. x 12 in. with 3 ins. of week-old water (6.9 pH and 11° D.H.). The thermostat was set at 78°F and a  $\frac{1}{2}$  in. layer of boiled peat was laid on the bottom. Two days were allowed for settling down and then a large nylon mop freshly scalded (as I thought) was placed in the back end of the tank and my pair of *A. australe* placed in just before bedtime. Four days later I removed the spawned-out pair. The tank was then heavily shaded. After a further three days had elapsed I spotted large numbers of fry just at the free-swimming stage. I then commenced the usual programme of feeding often and plenty of it, consisting of microworm and brine-shrimp, etc.

I began to suspect something was odd after a further

10 days because the fry seemed to carry out a strange feeding pattern. I therefore examined them under a good light and found I had *A. australe* fry and a different species with a double dorsal fin, which could only be Australian Rainbows (*Melanotaenia Maccullochi*). The rainbows dominated and devoured all the *A. australe* within a month but I raised 73 nice rainbows.

The mystery of how they came in to the tank was cleared up when my wife remembered knocking a spare nylon mop into my tank containing adult Rainbows and other adult fish. This was left in for an hour or so and then placed in a dry plastic box. This took place in the afternoon in the evening I scalded the mop I wanted to use and placed it in a sterile plastic box. I must have put the wrong mop in the breeding tank but I was happy with the result!

# WHAT IS YOUR OPINION?

By B. Whiteside



MR. STEPHEN CREESLEY, of Bolsover, Nr. Chesterfield, writes to say that this is his first letter and that he enjoys and has learned greatly from this column. On the question of favourite fish foods Mr. Creesley prefers "Tetramin," as his fish always clear it up quickly and the flakes float on the surface longer than most others he has tried. He does not like snails in his tanks as he thinks that they make them look unsightly. He removes any which are introduced, immediately. He did let the snails in one tank get out of hand, and Indian fern and similar plants were eaten to shreds. Mr. Creesley sterilises his aquarium plants by leaving them soaking in a deep pink solution of potassium permanganate for ten minutes.

The second letter comes from Mr. John C. Lewis, who lives at Kington-upon-Hull, E. Yorkshire, and he considers that the cause of split fins in guppies is allied to the following: (a) Temperature—when, as an experiment, Mr. Lewis raised the temperature of one of his tanks, he found that split fins became more prevalent than before; (b) Bacteria—an increase in temperature would stimulate the growth of certain kinds of bacteria, and the odd virus, as well as the usual infusoria, and a slight nip from another fish would permit the ingress of these—more so if the nipped fish was in poor condition; and (c) Structure of fins—in those guppies which have been bred for long fins and tails, a small tear would tend to spread "with the grain," so to speak. As to curing split fins, he has found that a few drops of a 1 per cent or 2 per cent solution of neutral acriflavin in the tank, just enough to give a slight green fluorescence, added to the water about twice per week, will usually clear up slight splitting, while more serious cases are best isolated in a clean tank with a few drops of acriflavin solution added. If this is not possible, netting the fish and dabbing the split with the solution will help, and during treatment it is best to feed the fish liberally with really clean live food.

Aquarium plants which Mr. Lewis has had in flower are: (a) *Vallisneria spiralis* which were planted in an 18 in. x 10 in. x 10 in. tank, and allowed to "run wild". The water in Mr. Lewis's area is rather hard, so he added 50 per cent rain water to the tank, which was kept at a temperature of 78°F, with a 40 watt clear incandescent bulb for illumination. After about three months a speck of white/yellow was noticed, and this turned out to be a flower spike, just above the water surface. Within six weeks there were about five spikes so he tried to pollenate them, but they all seemed to be female plants. The plants got no fertilizer, only the droppings from the livebearers in the tank. An under-gravel filter was in use. (b) *Aponogon*—He currently has in his larger 36 in. x 15 in. x 12 in. tank, an unidentified *Aponogon* which is flowering for the second time. An under-gravel filter is used, the temperature is 80°F, and the lighting is from a 30 watt warm, white fluorescent

tube. Other plants in the tank include a magnificent Amazon sword, Indian fern, chain swords, Cardamine and *Bacopa*. In this tank, three drops of liquid plant food are added per month, and when, at first, the algae subsided, the improvement in the plants was evident. The *Aponogon* grew rapidly and four months later a flower spike was noticed. It was 5 in.-6 in. in height, grew extremely quickly above the water level, and flowered with blooms which were about  $\frac{1}{2}$  in. across—white, with black speckles which Mr. Lewis presumed were the stamens. He finds that most plants respond to plenty of soft water in his tank.

Mr. Lewis finds that the best conditions for *Vallisneria* and *Wistaria* are: temperature, about 78°F for *Vallisneria*, reasonably soft water, and incandescent lighting; he often puts a few drops of liquid plant food (indoor type) in his tank, and it works wonders with any plants; water should be slightly acid; *Water wistaria* likes the above conditions also but with a temperature of about 76°F. He finds this plant to be practically indestructible.

Master John Cooper is fifteen years old, and comes from Basingstoke, Hants. John writes on the subject of keeping small reptiles, which he has done for a couple of years. Although he has only six small reptiles in his collection, he still experiences some difficulty in supplying adequate food for them, especially in the summer months when garden worms, their main diet, have burrowed deeper to find moist conditions. Originally, in the garden, he could find a sufficient number of worms, but he finds it surprising how quickly the supply goes. Master Cooper has a tip for getting worms without killing oneself by digging. He mixes some washing powder detergent with water, and waters it over an area of ground. Any worms there will soon rise to the surface. He finds that more worms can be found in lawns than in bare ground, and although the detergent does turn the grass a yellow colour for a couple of days, it soon clears up. The worms should always be well washed to remove the detergent. John has fed his reptiles with such worms for a long time, with no ill effects. A more convenient food than worms is maggots. These can be bought in any angling shop for a few pence, and can be kept in the fridge, to stop them from chrysalising, for at least a month. Master Cooper finds that reptiles can be very fussy, and when he first got his he could only get them to eat worms but, after perseverance, he finds that they now take worms, maggots, woodlice, flies and various other insects.

Kirby Lonsdale, Westmorland, is the home of Mr. S. N. Paul, who also writes on the subject of small reptiles. He finds that meal-worms are excellent for all small lizards, from small wall lizards to large-eyed lizards. Mr. Paul usually leaves some sort of bowl in the tank so that the

lizards can eat the meal-worms whenever they want. His blood lizard, *Crotalus variegatus*, will eat any small earthworms put in front of it on the branch where it usually sits. If the earthworm is not eaten, it is removed, otherwise it will dry up. Even Mr. Paul's Zonure will take earthworms, and it seems to benefit a lot from them. He finds that small snakes will not take meal-worms at all, but salamanders and frogs seem to love them. The Zonure loves cut up grapes which are pushed up to its mouth, and if it is hungry, it will always eat bits. Most of his lizards take all kinds of fruit, including tomatoes, grapes, oranges, apples and pieces of raw, peeled potato.

Not many of his small reptiles will take raw meat, except the red eared turtles, which love it. They also like lettuce, and just leave the hard core. The turtles also like fish and guppies, and Mr. Paul's alligators will only eat fish and meat. Each evening his wall lizards, green lizards, blood lizards and Zonures are given a dish of tomatoes, grapes, bits of orange, meal-worms and earthworms. Most of his snakes just eat once, or maybe twice a week, and they usually eat earthworms.

\* \* \* \*

I do not have much to say on the feeding of small reptiles as I have not kept any, except a tortoise, since I was a youngster. I have had my tortoise for sixteen years, it having been given to me by an uncle who, as a sea captain, had brought it home and kept it for several years before it was given to me. My tortoise, Tojo by name, has survived each winter in a box of hay, kept in the roof of the garage. Tojo has become very tame over the years and will respond to known human voices. He feeds upon dandelions, lupin leaves, apple peelings, lettuce and, if he gets to my dog's dish, soaked dog meal. He does not drink water and manages to get all the liquid which he needs from his food.

I have heard it said that under gravel heaters encourage plant growth in the aquarium but have never tried them myself. I do not have one particular favourite brand of fish food which I use, but rather make use of a wide variety of foods of all types. I have a habit of using foods in rotation, and when several drums get low, I mix the remainder of each together, and fill one drum with it. Thus my fish, at one feeding, may get both powdered food and flake food, mixed with one or two varieties of freeze-dried food. One of my complaints about many foods on the market at present is that the particles are too large for the average and smaller aquarium fish. I often have to grind foods between finger and thumb, crush them with a hammer between sheets of newspaper, or pass them through a kitchen mincer, to render them small enough for young fish or some of the smaller fish such as guppies or tetras. Many foods are very expensive and I often wonder, when I purchase a drum of food, why it should cost more than half-a-pound of best steak. Manufacturers, could prices not be reduced (even allowing for the scientific research which firms put in to the development of new foods)?

On the question of sterilising aquarium plants, I'm afraid that I just don't bother; neither do I place new fish in quarantine. Many people would disagree with the latter practice but if one knows one's dealer, then the fish should have been quarantined before sale. Most fish diseases with which fish in my care have met, have come from stock bought from, or given to me by, aquarists who are not dealers. Split fins in guppies can be the result of heredity,

or of their environment. There is nothing that can be done to affect the heredity of a guppy except to not use, for breeding, those fish which have a tendency towards developing split fins. As regards the environment, one can take precautions to see that the fish are kept in clean, healthy conditions, and that their aquarium does not contain objects such as sharp rocks which could cause damage to the fishes' fins or body. Some of the nets which are on sale have very tough nylon fibres which may cause damage to a netted fish. Check your nets and see if they are of the tough type. It does not cost much to invest in a softer net but make sure that the mesh is not so fine that it prevents the speedy flow of water through it, otherwise tanks may be wrecked in trying to make a catch. As most nets have a seam along the bottom edge, make sure that the rough edges are on the outside of the net before attempting to net a fish. It only takes a second to turn the net outside in, and this may prevent damage to delicate fins. If a fish does develop a split fin, I usually do not take any extra steps to encourage it to heal, unless any form of infection develops at the wound. Fins will usually mend without attention although they may leave a scar or thickening at the site. I have known of guppy breeders who have sliced off split fins or tails, to encourage uniform growth of new tissues, but I have never fancied doing this myself. The tails of large, fancy male guppies are sometimes removed to enable the fish to mate more easily with females, but again I have never tried this. It sounds a little sadistic if done without an anaesthetic! Snails in the aquarium I do not mind, if they are kept under control, except in the breeding tank for the egg-layers. Some damage may occur to plants' leaves, but if it is not excessive, the plants will come to little harm, although they may look a little unsightly. Snails may do a lot of good in feeding on algae and excess dried food, and my favourite snail is the Malayan sand snail, except in tanks with peat under the gravel. As these snails spend most of the daylight hours digging in the gravel, and only appear at night, they can disturb the peat base and release it into the aquarium water. In bare tanks, or those with gravel alone, I think that such snails do a useful job; however it is a matter of opinion!

Well, these ramblings are all that I have to say for this month. Do keep the letters coming in, and print your name and address clearly.

\* \* \* \*

We would like to have your own opinions on the following questions for the next article in this series: (1) What steps do you take to prevent the spread of algae in your aquaria, and what have your experiences been with the use of algicides? (2) Do you favour the use of razor blades for the cleaning of the front glass of your aquaria, or do you have some better method which may prevent the possibility of the glass being scratched? (3) Have you any experiences of raising young fish with adults, and finding that the inclusion of the adults with the youngsters retards the growth of the latter? (4) Which live food do you prefer to feed to your fish, and what, do you consider, are its advantages? (5) If you left your fish to fend for themselves during your holidays, in what condition did you find them and the plants on your return? (6) Which are the easiest small reptiles which could be kept in a school science laboratory? (7) What are the attractions of keeping fish in a garden pool, as opposed to an indoor aquarium?



## THE EDIBLE FROG

By Andrew Allen

THIS LARGE and beautiful frog can be a particularly troublesome character in the indoor vivarium. It is certainly not an ideal inmate, and its brilliant green coloration seems to degenerate rapidly into a muddy brown. Thus it ceases to be a colourful and interesting show-piece, and instead becomes an eyesore to any sitting room or reptile house. Nevertheless, with care, it can be housed in these conditions, though other alternatives are preferable.

The first and most imperative essential is a large aquarium (upwards of 48 inches long), with a safe cover. The aquarium size is a vital point, for this frog is not only an extremely powerful jumper, but has also a particularly flighty temperament. As a result of a sudden movement from outside, it can damage itself badly from a fear-inspired leap, even against glass walls. It has a lowly intelligence, even for a frog, and learns this lesson slowly, if at all, in contrast to the more sensible and deliberate toads. The aquarium should be placed in a fairly, but not excessively, sunny position; for without this commodity the deterioration will be inevitable whatever the precautions.

The environment should be a semi-aquatic one. The aquarium can be divided in half by a log placed diagonally across it. To one side of this should be packed a light, rich soil. Grasses, mosses and many marsh plants should be grown in bountiful abundance. Watercress and various plants that habitually grow in shallow water should be planted in the aquatic half on a typical aquarium base medium. The water should vary between depths of about one and seven inches. This should be replaced often with fresh rainwater, and the moss should also be kept fresh. All the foods generally given to batrachians will be accepted by these frogs, unless, as sometimes happens, they go on a hunger strike. Food will be taken in the water, thus widening the available range. Problems do not end here. Artificial hibernation is both difficult and risky. On the other hand overwintering tends to impair fertility, disrupt the breeding cycle, and lead to an earlier death than normal.

Keeping them in the indoor vivarium is thus fraught with pitfalls (to which we can add a stentorian and raucous croak from the males), though in some cases this alternative may be inevitable.

A greenhouse or a cold-frame are both more acceptable alternatives. The problem of space is thus automatically solved. The sun entering is more than sufficient, and the temperatures rise to beyond 100°F, with beneficial results to the edible frogs. They remain timid, but appear to have no consciousness of the fact that their quarters are restricted. All that is needed is a good, deep pond, well planted with aquatic weeds, a deep forest of vegetation on land, and several vantage points from which to glean every ray of the sun. However, deep shade must also be available. They will thrive equally well in both greenhouse and cold-frame.

I have five adult and several immature edible frogs, in company with other amphibians, in a large adapted cold-frame. It is made of wood and stands on several courses of Thatcham blocks. An old sink is adapted to a pond, and in this the frogs hibernate, although there is also a hibernating chamber on land. The frogs are a visible proof of its success. On most bright days they can be seen sunning on the ledges around the edge, skins glistening a magnificent and verdant enamel-like green.

There is also another very viable alternative. This is to keep them in a perfectly ordinary garden pond. I have two such ponds, near together in my garden. They are in a sunny situation, but with ample dense shrubbery in the background. Three years ago I placed four adults in them, and since then several young frogs have appeared. They rarely venture more than a few feet from the pond's edge, and can often be seen sunning on the overhanging slates. More often all that will be seen are one or more gigantic "plops", as all the baskers dive hurriedly into the water. The pond has thus become a feature of the garden, and the frogs appear to have made no attempts to vacate it.

Certain qualifications must be expressed concerning this method. I would hesitate to attempt it anywhere much North of the Wash. The adults would probably survive, but breeding would be extremely doubtful. Even at Worthing the number of young raised seems to be fairly small. Every mile further North makes the climate harsher and more inhospitable to these sun-loving frogs. It would also be unwise to loose them near to other stretches of water. They might prefer the next-door neighbour's pond to your

own, or migrate en masse to the local marshes and ditches. But provided there is no other water within a short distance, they should settle down well, though there must always be some element of risk. Similarly, though they could easily escape from most reptilarians, they will probably settle down well within its bounds.

The species that will live amicably with *R. esculenta* in the indoor vivarium are rather limited. Its nearest cousin the marsh frog (*R. ridibundus*) may always be kept with it, as in most cases may the painted frog (*D. pictus*). The common frog (*R. temporaria*) is a suitable companion when adult, provided that adequate dry land is available. Large crested newts (*T. cristatus*) and ribbed salamanders (*P. waltii*) may be possible companions, but only when entirely adult, for it must always be remembered that the edible frog is a noted cannibal. Lizards and toads should be avoided, for they will not tolerate the particularly wet habitat simulated in the indoor vivarium. In the outdoor vivarium the choice is much wider. I suggest that you consult my article in the January edition of the *Aquarist*, which is entitled "Reptile Communities in the Outdoor Vivarium". This suggests a number of combinations, in many of which this frog figures, applying to the three main types of outdoor vivarium. It should not be kept with smaller species unless they are particularly repugnant or very unobtrusive. Mine have not molested tree frogs (*H. arborea*), green toads (*B. viridis*) or baby common frogs and toads with which they have been housed.

Presumably if enough space and deep cover is provided this danger can thus be negated. However I have not dared to try them in my greenhouse where baby lizards might provide a more obvious contribution to the menu.

I have sounded many dire warnings so far, but these should not be a discouragement. The advantages of this frog are many, and tend to outweigh the disadvantages. They are conspicuously beautiful, something that is rather rare in the European Ranidae. Thus they provide a wonderful centre-piece in the indoor vivarium, and become a feature in any outdoor collection of frogs and toads. They are not at all secretive, and, despite their timidity, are nearly always on view both night and day. This is a sharp contrast to most European Amphibians, that spend the daylight hours in some secluded corner, or beneath the pool surface. Unfortunately they tame very slowly, but on the other hand they are fairly generous breeders in restricted conditions. In the right community they seem to set off their drabber relations, and emphasize the intelligence of such creatures as the toads. In addition they are very reasonably priced (currently between 4s. and 10s.), unlike the slightly larger marsh frog.

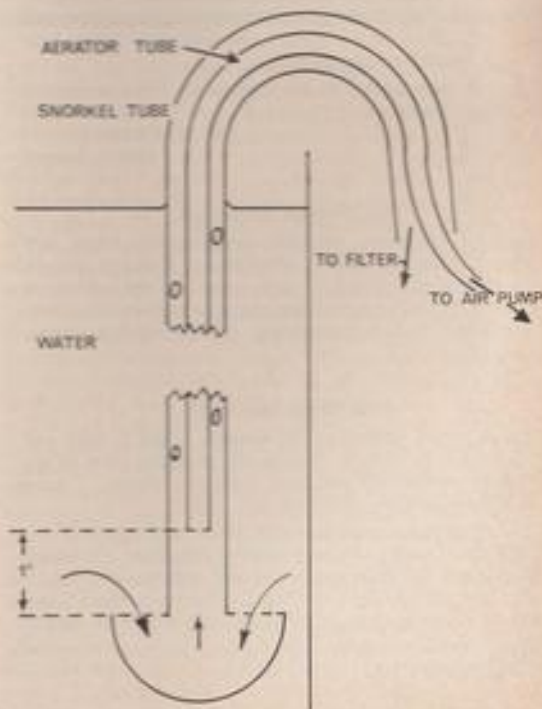
*R. esculenta* is to be thoroughly recommended for every reptilary, greenhouse, or other outdoor collection of Reptiles and Amphibia. It is not the Amphibian to keep as a "pet"; and cannot be recommended wholeheartedly for the indoor vivarium. However it will never fail to delight with its wonderful colours, and lively habits.

## HOME-MADE AIR-LIFT FILTER

By Stuart Smith (aged 15)

I THOUGHT you might be interested in an air-lift tube for an outside filter which I made, using an old swimming snorkel. The mouthpiece and float are removed and a length of aerator tubing is inserted to within about 1 inch of the bottom of the tube (see adjacent diagram). The tube is supported using heater holders. My filter-box is made of a plastic lunch box filled with nylon filter material and water is returned to the tank along more aeration tubing.

It would be interesting to hear of other Aquarists' home-made filters in your publication.



## OUR READERS WRITE



### Heater and Thermostat

As a friend of Graham Cox and one who admires his work tremendously I have just read with interest his article in the August issue. One point he modestly omits is that since his entry into the retail field of marine fishes, prices, due to his influence have fallen so that even the more exotic fishes are within reach of people with mortgages and families to take care of, for this I thank him.

Nevertheless there is one item I so violently disagree with him on I felt compelled to put pen to paper and that is the question of combined heater and thermostat. This particular piece of equipment cost me £25 worth of marine fish; as is usual when a thermostat packs up, it jams in the ON position; consequently I awoke to find a tank full of pre-boiled fish.

My advice with a 36 inch tank is to use two low wattage heaters well spaced and a separate thermostat. This gives added protection; if one heater fails the other can cope until you put it right. It also spreads the heat more evenly over the tank when working properly.

(As one who knows to his cost, never use a combined heater and thermostat.)

C. R. OUTTRIM,  
Oxted, Surrey.

### Pen Friend Required

Mr. K. Matthews of 2384 Glinmat Cir., Apt. 105 Wheaton, Maryland 20902, Washington D.C., is anxious to contact a pen friend to correspond on the subject of fish, etc. He is 21 years of age, married, with two children. His interests include swimming, skiing, painting, horse-riding, etc.

### Fish from the Wild

As an ardent coldwater fish keeper, I feel I must put my thoughts to paper. Due to the shocking state of the coldwater sections of our local aquarium shops, I have started to obtain my fish from the wild.

The other day, I caught a small Miller's Thumb and two small Stone Loach. So, as a result of this, even if the local dealers clean up their tanks and sell only healthy fish, I doubt if I will go back to them. Thanks to them I am now on to a wider range of coldwater fish than they supply.

Now, could you print more about the wide range of British coldwater fish. As information is hard to get?

ERIC HOLLIS,  
Speke, Liverpool, 24.

### Angel Queries

I was very interested in the article Angel Antics published in the August edition of the *Aquarist*. It could have been written by me as I have experienced the same difficulties as the writer, although over a period of only four months.

The parents, of which I have two pairs, lay about every ten days, occasionally longer, and the eggs hatch in just over 2 days. The fry, or some of them, appear to be free swimming at about four days, at which point or shortly after, they die. The longest I have kept them alive is seven days from hatching.

I have also tried the method mentioned in the article of a bare tank with only gravel and an under-gravel filter and on the last occasion a bare tank, no gravel and an outside filter. Still no success. Of all the methods I have used, the most successful would appear to have been a bare tank with only the gravel and under-gravel filter and water from the tap (our water is hard) which has stood for a few days with an airstone going. On this occasion I had a 90% hatch and the fry lived for seven days from hatching.

I still refuse to be beaten and while the angels are still providing me with eggs I shall experiment further. However, I would be grateful if anyone has any suggestions as to where I, in common with the writer of the pre-mentioned article, am going wrong.

yours faithfully  
J. B. ELGER.

### Spotted Females

I was very interested in Mr. Gardiner's article on "Keeping and the Breeding of *Kribia*" in your August issue, but I do hope he tells no more budding aquarists "that if a fish had tail spots it was definitely a male."

I have a beautiful pair of breeding *Kribia* and although the male has no spots on the caudal fin, the female has two beauties.

I know that fish keepers have many different opinions but as Bob Gardiner made this point a definite fact, I feel that he may confuse the amateur breeder who thinks he has a pair of these fish, and is trying to get them to spawn.

If it's any consolation I will admit that I enjoyed his article and agreed with all other basic points.

D. BABINGTON (Mrs.).

Will Mr. David Carl Forbes please get in touch with the Editor.

# NAME CHANGES AMONG THE KILLIES



By D. E. Sale



Golden Pheasant

Photo: Karl Knaack

FOR THE last year or two many aquarists have been puzzled, not to say distressed, by quite a larger number of name changes among killifish. Perhaps the time is now ripe for a look at some of the causes responsible for these changes, and for a list of the more important changes which should be of assistance to aquarists ordering fish by rail.

Perhaps the most common reason for apparent changes lies in the fact that, while male killies are quite easily identified, the females of many species are so similar as to be almost unidentifiable while alive. Only after death can scale counts and other technical matters be attended to. Probably the best-known case of this kind is that of *Aphyosemion liberiense*. A female of this species was first described and named over fifty years ago, but no male. When, therefore, many years later, a male was captured, it was not recognised as being identical with *A. liberiense*, and was, in fact, classified and described as *Calabaricus*, a name later changed to *A. calabaricum*. Not until very recently were the details of these two supposedly different species compared, when it was realised that they were, in fact, one and the same fish. Since the name *Liberiense* was given to the fish first, this is the name by which it must now be known; the name *calabaricus*, or *calabaricum*, now dies out of existence.

A much commoner fish which has only in the last few months been correctly identified is *Aphyosemion Gardneri*. This is the fish shown in several text books as *A. calliarum*. The reasons for this change are complex. Firstly a fish was caught, described, and given the name *calliarum*. Apparently quite a few of the older aquarists saw, if not owned, speci-

mens of this fish, which subsequently almost disappeared from aquarists' tanks. Some years later a fish, broadly similar in colour pattern, appeared on the scene, and was promptly but mistakenly hailed as *calliarum*. As this is one of the very easiest *Aphyosemion*s, it spread rapidly throughout the country under its false name. About two or three years ago, however, two almost simultaneous events took place. The old, true *calliarum* reappeared, and also a comparison of the description of the old *calliarum* with the newer species proved that these were, in fact, two quite separate species. In the belief, therefore, that the false *calliarum* was a new and undescribed species, it was given the name *nigerianum*. Still more recently, this year in fact, further comparison with records showed that *nigerianum* is identical with the description of *Aphyosemion Gardneri*, so that is the name by which it is now known.

This, of course, leaves the problem: What is the fish which used to masquerade as *A. Gardneri* (popularly called Gardner's Fundulus, the Steel-blue Fundulus, the Togo Fundulus, etc.)? It is possible that this fish is only a variety of the quite common, but smaller, *A. filamentosum*, but it is quite likely to prove to be a different, possibly unrecorded, species. It seems, unfortunately, to have become very rare, and I would be pleased to hear from any aquarist with a pair to spare.

Finally a new genus, *Rohlfia*, has been formed; this includes certain fish formerly known as *Aphyosemion*, but differing from them in certain important but not easily visible features. The genus was first formed when the Golden Pheasant, formerly known incorrectly as *A.*



*sjoestedti*, was found to possess these differences, and named for the first time, *Roloffia occidentalis*. A few other fish have since been referred to this genus.

While all these changes may appear at first glance rather unnecessary, aquarists nowadays are becoming increasingly scientific in many ways; in feeding, water analysis and heating more advanced techniques are being employed. Surely it is worth while to know the names of the fish we keep, otherwise we get to the stage of carelessness where, for example, a Mercedes-Benz is spoken of, like a Volkswagen "beetle," as "just a German car."

A list of the more important changes follows:—

Old or Incorrect Name.	New or corrected Name.
<i>Aphyosemion</i>	
<i>Beauforti</i>	Gularis
<i>Calabaricum</i>	First <i>A. liberienne</i> , now <i>Roloffia liberienne</i>

<i>Striatum</i>	} of text-books	<i>Lujes</i>
<i>Calliurum calliurum</i>		<i>Gardneri</i>
<i>Calliurum ahli</i>		
<i>Nigricanum</i>		<i>Gardneri</i>
<i>Sjoestedti</i> (Golden Pheasant)		<i>Roloffia occidentalis</i>
<i>Caeruleum</i> (Blue Gularis)		<i>Sjoestedti</i>
<i>Spirelli</i>		Walker
<i>Walkeri</i>		<i>Fundulusoma Thierryi</i>
<i>Gardneri</i>		<i>Filamentosum</i>
<i>Rivulus</i> "Achilles"		<i>R. tenuis</i>
<i>Micropanchax macrophthalmus</i>		<i>Poropanchax macrophthalmus</i>
<i>Epiplatys annulatus</i>		<i>Pseudoplatus annulatus</i>

In addition to the two species mentioned above, the following former *Aphyosemion* are now known as *Roloffia*: *R. guineensis*, *R. petersi*, *R. roloffi*.

## THE GUPPY



By Jack Hems

TODAY GUPPIES are wondrously beautiful, both in coloration and finnage. Yet up to the beginning of the 1930s, some seventy-one years after the species was first described for science (from specimens collected in Venezuela) by the German ichthyologist, Wilhelm C. H. Peters (in 1866 it was re-discovered, so to speak, in Trinidad by the Rev. Robert John Lechmere Guppy, from whence the fish's popular name), the average aquarium-bred specimen bore a close resemblance to the shorter-finned and less resplendent wild guppy (*Lebistes reticulatus*), that ranges in the natural state from northernmost South America to the Lesser Antilles. Different forms in colour and finnage occur in different localities.

In 1934 a Swedish breeder produced a gold guppy. Concomitant with this development there was a great leap forward in Europe and America in the production (in the tanks of the geneticist and the serious hobbyist alike) of new and improved varieties. Needless to say, the gold guppy played an important part in the development of new strains. Inevitably, the Second World War put a stop to much experimentation (though the first albino guppy was produced in America in the early 1940's), but hardly had the guns stopped firing in 1945 than guppy breeders here and abroad were hard at it again, selecting, cross-mating, and inbreeding with even greater enthusiasm than before.

The Germans were, and are at the present writing, to the fore in the culture of top-quality guppies, though breeders to the south-east, in Czechoslovakia and Austria, and, of course, breeders in America, run very close. Voluminous



Photo: Karl Knaack

caudal fins (delta-tails, fan-tails and veil-tails) are a German speciality. Brilliance of colour and large but well-proportioned bodies are a distinguishing feature of German-bred guppies, too.

A point of interest to all guppy enthusiasts is the development of colour in the caudal fin of the hitherto drab female. And still another point of interest is the fact that the first specialist guppy society in the world was founded in this country in 1938. Today, nearly every city and town in Britain has its guppy society, which holds regular table shows and recognises the standards for judging laid down by the Federation of Guppy Breeders' Societies and the Fancy Guppy Breeders Association.

The life span of a normally healthy female is not more than eighteen months to two years. She is pregnant for most of this time. The signs of advanced pregnancy are a bulging and increasingly darkening abdomen. Just before the young are born she frequently takes up a tail-down position in the upper or lower levels of the water. Thirty and more young are delivered at a time (it is on record that

a female owned by Paul Hahnel, a famous American breeder, delivered 170 fry of which 120 lived) but first and last broods are always small. From one fertilisation up to eight broods may be delivered within the space of a year.

Well-fed adult guppies take very little interest in their young, but ill-nourished or erratically-fed guppies are quick to feed on newly dropped fry. It is of particular importance, then, to take every precaution against cannibalism. A thick tangle of plants will, understandably, give the fry, which seek the surface and the light a few months after birth, excellent cover. Alternatively, a female may be placed in a breeding trap, which is a sort of loosely constructed box all but totally submerged in the aquarium. As the fry are born they spiral down and out of the slit or slits in the bottom of the box to safety. Naturally, no other fishes should be present in the rearing aquarium. The size of the size of the breeding trap is important. Commonsense demands that it should not restrict the movements of the female too closely. And to go back. Unless a female is placed in a breeding trap some nine days or so before her abdomen becomes noticeably distended, it is advisable to leave her undisturbed; for any sort of shock received when she is an advanced stage of pregnancy will almost certainly result in her death or the delivery of still-born or deformed or weakly fry.

Although guppy fry will grow quite well on a diet of dried food alone (flour-fine to begin with), they will grow fastest and best when a liberal supply of micro-worms, brine shrimps, and, later, tiny *Daphnia* and gnat- or mosquito-larvae is offered. The latter is a favourite food of the guppy in the natural state, and for this reason the species has been introduced into many parts of the tropical world to help in the fight against malaria; in point of fact its recognition as a larvicidal fish dates back to the early 1900's, when it was the practice of the Zoological Society to maintain stocks of the guppy for dispatch to many parts of the then far-flung, and often malaria-ridden, British Empire.

To get the best out of guppies it is essential that they are given plenty of swimming space in clear water, freshened up every so often with new water drawn from the tap and preferably boiled first to precipitate any existing calcium bicarbonate; for it is generally believed that guppies thrive best in water low in calcium. In a word, they do best in a soft neutral to slightly acid water. Generous planting will help to keep the water healthy. Plants ideally suited to a guppy tank are those with finely divided or lacey foliage such as *Myriophyllum* or Indian fern. An 18 in. by 12 in. by 12 in. tank is a suitable size for a pair or trio. But if breeding for sale or exhibition is intended, then several tanks are necessary for rearing and sorting the fry and for keeping the sexes apart until they are required for mating.

Sexing is possible in about twenty-eight days. At this age some of the rays of the anal fin of the rapidly maturing (sexually) male begin to lengthen—to form a stick-like appendage or gonopodium. Also, a young male, uncoloured, may be recognised by the fact that his anal fin begins further forward on the ventral surface than that of the female. The specialist breeder pays great attention to heredity in the guppy, and endeavours to work out a breeding programme which is likely to accentuate characteristics most desired or admired. Size is usually passed on from the females, and large females should be chosen for mating to selected males. If virgin females are kept isolated from the males for about



Photo: Karl Knaack

five months the chances are that their fry will grow into more magnificent fish than fry obtained from half-grown or poorly developed females. In general the colours and finnage are passed on through the male. But the finer points of breeding and the intricacies of inheritance in the guppy are too involved and too many to treat of here. But there are books on the subject: and these make fascinating and informative reading.



(NEWS FLASH) Broad Green Aquarium pond exhibit catches the public eye at 'The Aquarist & Pondkeeper' Fishkeeping Exhibition.

## KOI and HI GOI CARP

By F. L. Vanderplank

UNFORTUNATELY there is considerable confusion in this country as to the differences of Koi and Hi Goi carp; according to Japanese breeders, and they should know, the word Koi means good and Hi Goi very good, so the names are merely a rough classification of specially bred and usually hybrid coloured and patterned carp. These hybrid carp can be obtained like shubunkins in a very wide range of colours, in fact every colour possible. Different colour groups and patterns have their own special Japanese names which are generally too foreign for most of us to master. The best fish often sell for over £200 each in sales in Japan and surprisingly enough the most valued are not the most highly coloured but a breed with dark, light grey and white in a special type of pattern, which obviously means a great deal more to the Japanese expert than it does to us.

Both Koi and Hi Goi (if there is any difference other than degree of quality) are bred quite extensively in Hong Kong and Singapore, but the quality of these fish is poor compared with those obtained direct from Japan. In January 1968 I bought 20 Koi which had just been imported from Singapore and these cost me 2s. each. In March I bought 20 of what were stated to be the very best Hi Goi from Hong Kong, this time at 6s. each; both batches of fish were under an inch long. The first batch of Koi were kept in a 300 gallon concrete tank indoors at 75°F and fed liberally with daphnia and grew at the rate of an inch every 6 weeks and were, in fact, what the Japanese would describe as Hi Goi. The more expensive second batch turned out to be ordinary Goldfish and although I pointed this out to the seller, he did not offer to refund my money although at the time of purchase I had stated that I considered them to be merely Goldfish that had coloured early due to being raised at high temperatures. These were kept and grown till they were 6 in. long by January 1969, and as there was no doubt that they were ordinary goldfish, they were sold as such. The Hi Goi carp were reared together with some common goldfish and comets in a 1,000 gallon concrete tank at 75°F and fed very liberally on daphnia. During early May when they were between 3 and 4 in. long and showing their various colours and patterns the common goldfish started chasing and the Koi carp joined in the general pursuit. A heavy spawning was produced but at the time I thought it was all due to the common goldfish and comets so left it in the pond



This is part of the pond display supplied and erected by Mr. S. Cleveland, of Broad Green Aquarium, at the 'Aquarist & Pondkeeper' Fishkeeping Exhibition. This photograph does not do justice to the wonderful display due to the existing conditions but this was the most eye-catching exhibit that the editor has ever seen at an aquatic exhibition. The ornamental fish were so attractive that £85 of stock was stolen from this pond during the exhibition, an unfortunate loss to Mr. Cleveland after spending so much time and money in bringing the exhibit to Alexandra Palace.

on the quite considerable mass of Milfoil. As usual all the fish enjoyed eating the spawn and a week later they ate any young fish that was caught outside the weed mass. It was some days later when my son noticed that there were two types of fry and on examination I found that a lot of the fry were carp and not goldfish, (although of course the goldfish is a member of the carp family, it is distinctive even at that early age from true carp). Naturally every effort was made to save the fry and the adult fish were removed. The water temperature averaged 78°F and brine shrimps were fed several times a day. Within 6 weeks the young fry, both carp and goldfish, were averaging about one inch long. There is nothing unusual about this rate of growth in either of these species of fish. In Southern Italy, Japan, Singapore and Hong Kong where summer temperatures average 80-85°F in freshwater ponds and the fish are well fed, this is the usual rate of growth. At this stage I was able to separate out nearly 100 Koi carp which I had accidentally bred. These were separated into two batches, each in 200 gallon concrete tanks and they continued to grow rapidly on daphnia. At that time I had a very reliable and prolific source, but on July 10th, 1968, 7 inches of rain fell in one day and everywhere was flooded and my sources of daphnia were washed away and have not returned to date. Koi carp like goldfish will eat most foods but the danger with dry foods, as most aquarists know, is that any excess falls to the bottom and pollutes the water. To prevent this  $\frac{1}{2}$  of the water was syphoned off with the muck from the bottom of the tank every other day, but owing to the floods and without warning, the water company increased the chlorine content of the water and this killed all the Koi (and many other fish) in one tank before I realised what had

happened and could take steps to prevent it. Carp are well known to be sensitive to chlorine but can be hardened by gradually increasing the dosages over a period of several months, to tolerate any drinkable chlorinated water. If one does get an emergency where the fish are obviously in a distressed condition due to clean fresh water, I have now discovered the safest and most effective action is to place a quantity of charcoal (but not treated charcoal) in the water and this will absorb any gaseous poisons such as chlorine, fluorine ammonia, sulphur dioxide, etc., that may be in the water. As the July floods destroyed my sources of daphnia I had to fall back on prepared dried foods and my first choice is an excellent but very expensive imported food made up for tropical fish. The Koi continued to grow at the rate of an inch in every 6 weeks although the water temperature was lowered gradually to harden them off for the winter. By September they varied between 3½ to 6 in. long. There was a variety of Grey, Black, White, Gold, Yellow, Blue and other colours in the fish, the barbels or feelers at their mouths were now quite prominent. I sold six of the biggest in September to a public aquarium, and two others with bladder trouble were discarded in an open pond. Since the imported food was proving very expensive (I had nearly 10,000 fancy goldfish as well as the Koi to feed) I experimented with other and cheaper foods. The Koi carp are particularly fond of the common duckweed and are useful for eradicating this pest from a pond; also they will eat pond snails (another useful point), earth-worms, white worms, tubifex etc. but are suspicious of new foods at first. As my supply of Company's water was still very heavily chlorinated and my own supply of rainwater very limited, I had allowed the 200 gallon tank with the 30 odd Koi I had bred to become very green with a blue green algae, which,

due to saturation, suddenly died with liberation of sulphurous gases and this quickly affected the carp which were gasping for oxygen. Later I discovered with other fish that charcoal was the best and immediate action to take, but did not realise it on this occasion and this episode cost me half the fish and was followed a fortnight later by a very bad attack of Red Pest or pond disease (*Bacterium cyprinicida*) which killed all these Koi carp except one that had been left in another tank with some goldfish. The original Koi carp purchased in January had grown, the smallest 7 in. long and the largest 10 in. long by September. These were placed in a cold 1,500 gallon tank for the winter but were accidentally killed by an employee who filled the tank with chlorinated tap water. The one survivor I kept and the six I sold are now 14½ months after hatching and between 7 and 9 in. in length. Three black, grey and white, two black, grey, brown, purple and white and two with added reds and gold colours in their markings. The two with bladder trouble left in an open pond all the winter are still in it, about 6 in. long and still have bladder trouble but otherwise quite healthy. They have not been fed at all and seem to find sufficient natural food to survive and grow.

My conclusions based on this recent experience and that of some 30 years ago when I kept and bred Hi Goi carp and what I have seen carried out commercially in various tropical countries is that Koi and Hi Goi carp are in many aspects similar to goldfish, and can be bred like goldfish from an early age. With food and warmth growth is very rapid but they are prone to various diseases and water conditions. With outdoor temperatures the fish still grow faster than goldfish and appear to be hardy and disease resisting like the common carp which is part of their hybrid make-up.

## HELMUT HOFMANN

By Jack Hems

LET me tell you about this truly great hobbyist whom I met at our splendid show. Talking with him at the "Nuova" stand evoked the most pleasant memories of those years between the two World Wars when I used to obtain plants and fishes from Dutch and German dealers. Their stocks were immense, even by present-day standards. For instance, it was not uncommon for Paul Kloecker, of Cologne, to have some two hundred different submerged and marsh plants on offer at any one time. Boschmann of Rotterdam was always particularly strong in rare plants and fishes (I obtained my first plants of *cryptofolia*, later identified as a submerged form of *Lobelia cardinalis* from Boschmann around 1937).

As a boy of ten, Helmut Hofmann used to cycle hundreds of miles from his home in the mountains near Chemnitz to feast his eyes on the rare fishes and plants that could be bought or seen growing and multiplying in the tanks maintained by the one and only Hermann Härtel, of Dresden (when a newly imported fish defied all attempts on the part of continental breeders to propagate it the cry would usually go up: "Send it to Härtel."), Zeller of Magdeburg or Glaschker of Leipzig. All the same, Herr Hofmann was not backward in mentioning that a lot was in favour of some of these very successful breeder-dealers. For instance the water available in Saxony is of a similar quality to that

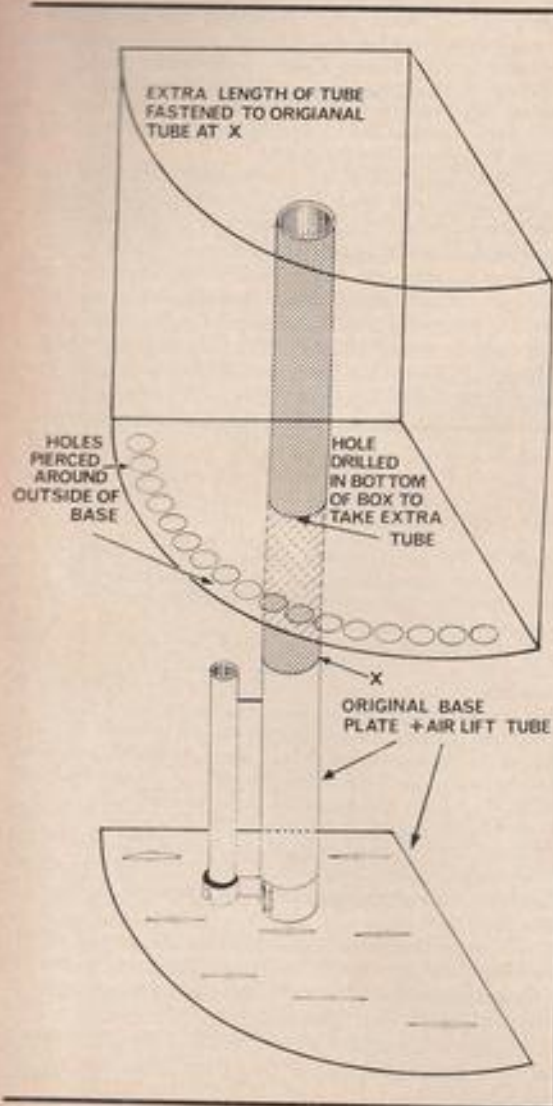
found in the upper reaches of the Amazon and the East Indies, and many fishes such as the neon tetra and the harlequin fish were spawned and raised in Saxony before they were bred anywhere else.

Herr Hofmann has lived in West Germany since 1950. Although he is connected with the hosiery trade in an executive capacity almost all his spare time of recent years has been devoted to devising new equipment to make aquarium keeping easier both for the experienced and the less-experienced aquarist alike. Herr Hofmann possesses an inventive turn of mind amounting to near-genius. What he can do, and has done, with plastics in the service of the fishkeeper must be seen to be believed. And the amazing thing is that most of his brain-children can be joined together and extended to make up very simple or elaborate water softening, filtration, or water circulatory systems.

For some time now (from 1967, to be precise) Herr Hofmann has been manufacturing in his own little workshop—recently enlarged to meet the demand for his equipment—the products of his aquarium-keeping skills. I hazard the guess that before long his name will be a household word in every country where our hobby has taken root and is flourishing.

# THE PERFECT FILTER?

By W. S. Rodgers



WHILST TRYING to find the perfect filter for a goldfish tank in my junk box, all I could find was an old internal corner filter of the quarter circle type. Having only a small vibrator pump at my disposal I decided to see what I could knock up out of the bits I had to hand, and the finished article could be described as a self-cleaning under-gravel outside-filter.

The sketch is more or less self explanatory, but to elaborate, the construction is as follows.

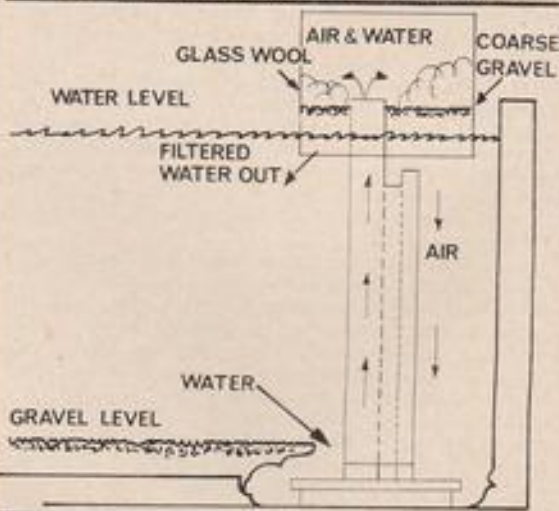
The only tools I used were an old small file, and a tube of plastic cement (the type used for those plastic model kits) and one of the rings on the gas stove.

Firstly I removed the base plate and air-lift tube (1 unit) from the box, and melted about 7 or 8 small holes around the base of the box, using the tang end of the file heated on the stove. Secondly, I melted a hole in the centre of the base of the box and while the plastic was still soft, I pushed in a piece of tube until it came about three-quarters of the way up the inside of the box (not critical).

This tube, being rubber, was fairly soft, and when the plastic tried to shrink as it cooled, it made a watertight seal (which surprised me!) though I hoped this would happen).

I then pushed the end of the tube into the air-lift tube (which fortunately was a good fit) and then experimented a little to find what the lift would do.

I found that the ideal height is with the bottom of box



just level with the surface of the water. This gave an enormous turnover of water in the otherwise empty tank so I decided to set it at that. The last step was to cement a couple of plastic strips alongside the rubber tube to make the job rigid.

The tank I use for the goldfish does not normally have a cover on so the fact that the filter sticks up in the corner does not bother me. Anyway, it will be hidden later on by some bullrushes (if I can find any round the local streams).

The bottom covering in this tank consists of large rocks only but the filter should work with gravel and the principle is the same as with an under-gravel filter. Water is pushed up the air-lift tube, and water and rubbish is drawn through the gravel.

This is where the difference is: With normal under-gravel filters the rubbish stays in the gravel, because the holes in the tube are too small to take it. With this filter, the rubbish is eventually drawn into the large bore air-lift tube and filtered out by the outside type filter on the top.

Another thought that occurs to me while writing this is that anyone with an old under-gravel filter could mount this to the outlet of the box, draw dirty water from above the gravel with an air-lift, filter it through the box, and use gravity to return the filtered water through the under-gravel filter, so preventing food and mulm, etc., settling in the gravel.

Both systems have so simple a theory that its a wonder nobody has tried them before.

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## INTER-PET PLANS

INTER-PET has just been granted an Industrial Development Certificate for building a new factory on a half-acre site on the new Parsonage Mill Industrial estate in Dorking.

The Managing Director, Dr. Neville Carrington, has retained Associated Industrial Consultants to study all the processes carried out by the firm and advise on the design of the new building which it is hoped will be completed by June 1970.

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## PROGRAM AIDS

THE FEDERATION of Northern Aquarium Societies has recently published a 10-page list of films which are available on hire or on loan from various sources and which are likely to be of interest to all Aquarist societies. The list covers 8 mm and 16 mm, sound and silent, colour and black and white.

For obvious reasons the Federation cannot supply copies to each individual society in the country but the list has been circulated to those Federations and Associations with whom we are in contact, together with an invitation to have further copies printed or duplicated for distribution to their member societies. If any other organised body of Aquarist societies, under any title, would like to take advantage of this invitation we will gladly supply copies—free of charge—on request.

W. T. KELLY,  
Hon. Secretary,  
Federation of Northern Aquarium Societies,  
31 Siddley Street,  
Liverpool, L17 8XU.

## OUR CRITICS REPLY

As Director of the International Marine Study Society, I know I shall be speaking for many of our members when I congratulate *The Aquarist* on the number of marine topics in the July Edition. I hope this trend will be maintained.

On the whole the articles were good and made pleasant reading but I was a little disappointed in Mr. Bill Simms' article on "Wrasse." His drawings (which are usually excellent) bear little resemblance to the living fish and the text was almost as uninformative in that it mentioned very few points that are characteristic of the various species. However, Bill has my deepest sympathies because being some of our most brightly coloured fish, they have been the subject of many artists' impressions and flowery literature. He has probably done his best in the circumstances.

I am glad to see a Marine Queries Column appearing in the magazine (July) but it appears to be absent this month (August). I hope the column will reappear and continue and one day we may learn the name of the writer.

The two articles by G. F. Cox—Report on spawning of Tropical Marine Fish (July) and The State of the Marine Hobby (August)—are both potentially good articles but have been spoiled by far too much product-plugging and name-dropping.

As the editorial comment so rightly points out, "it is likely that total impartiality may be impossible for him," and evidently it HAS been.

Never before have I seen such biased literature, produced under the facade of an article.

Superficially the article reads as an unprejudiced opinion, akin to a survey, by mention of several manufacturers and their products which have apparently received free publicity. No rival products to those manufactured by SeAquarium Ltd., in which Mr. Cox has more than some interest, have been mentioned other than one in which the narrative sinks to sarcasm.

The fact that Mr. Cox was stated to be the head of the only Professional Marine-Specialist Organisation in the world has given to the article a bias which may not be agreed with by other bodies.

I knew and respected Graham long before he started in the retail business. He is utterly devoted to marine fish keeping and he and I spent many pleasant hours discussing various aspects including biological filtration and synthetic sea water.

A great deal of time, courage, patience and devotion has been given by Graham to the publicising of marine fish-keeping, probably more than any other person in this country, and deserves every chance of success.

JOHN B. CLARK, Woodingdean, Brighton.

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## ANSWER TO FIND THE FISH *RIVULUS MILESI*

# THE SYNODONTIS CATFISH

□  
By Jack Hems  
□



The *Synodontis* species of catfish exist in a wide range of sizes, colours and finnage. They belong to the family Mochokidae. This family is indigenous to Africa south of the Sahara, though a few species do occur in the Nile river system as far north as Cairo.

The most characteristic features of this *Synodontis* genus are a club-shaped body, with naked sides, a short-based anal fin, and, in most species, a long-based adipose fin. The dorsal and pectoral fins are spiny. In not a few species the spines are studded with prickles. There are three pairs of barbels. These may be short or long, plain or antler-like (branched).

In the main *Synodontis* catfish inhabit sluggish waters where they sometimes congregate in large shoals. Although most species swim right side up, there are several that swim with the dorsal surface turned downwards. These back-swimmers are popularly known as upside-down catfishes. One of the greatest performers in this mode of getting about in all levels of the water is *S. nigricentris*. As the specific name of this fish suggests, the ventral surface is dark coloured: chocolate brown to blackish (this is the common camouflage-colour of the upside-down catfishes). The rest of the body is marbled in shades of brown on an ivory ground. Because *S. nigricentris* is lively and seldom exceeds a length of 2 in. it is well-suited to a decorative aquarium. A more handsomely marked species with similar swimming habits is described by D. McInerney in *All About Tropical Fish*. This species has mauve marblings and spots on a grey ground. Mr. McInerney tells us that *S. shostakovskii*—to give this catfish its formal name—is native to equatorial West Africa and reaches a length of about 6 in.

Of roughly the same size is *S. batensoda*, that ranges from the Nile basin westwards to Senegal. The coloration of this catfish is variable, but usually greyish green darkening to black on the underparts. Myriad dark spots are present in the fins and scattered over the body of young specimens. *S. membranaceus* is found over much the same range as *S. batensoda* and is not unlike this species in coloration.

Unfortunately it attains a length of about a foot which rather rules it out as a desirable home aquarium fish.

*S. notatus* is native to the Congo and attains a fair size (about 8 in.). Its maxillary (upper jaw) barbels are longer than the head and the adipose fin is shorter in the base than in most *Synodontis* species seen in the tanks of the larger dealers. The colour of the body is silvery grey above and whitish below. There is a bold black blotch in the middle of the sides. There may be some less conspicuous blotches in different parts of the body, too. For really striking markings, however, one has to seek out some other *Synodontis* species as, for example, *S. alberti* which is found in the Congo and is a sort of soft blue-grey spotted all over with large and small brown to blackish spots. The barbels on the upper jaw of this splendid looking catfish are very long. It attains about 6 in. Then there is the charming *S. angelicus*. *S. angelicus* is, also, from the mysterious Congo region. At all stages of growth this fish is beautiful. In its smaller sizes it is violet red blotched and spotted with brilliant white; in its larger sizes it is lilac grey to violet spotted with yellow to brown, or red. The lobes of the caudal fin are drawn out to narrow points. At full size this fish averages about 8 in. In all probability it reaches a larger size in the wild.

Even more spectacular is *S. decorus*. This fish has a white body and fins blotched and barred with black. The barbels are well-feathered. The first ray of the dorsal fin—in fine specimens—extends back over the caudal peduncle. The lobes of the caudal fin are deeply divided and handsomely marked in black and white. Aquarium specimens may exceed a length of 7 in.

It is interesting to note that a number of *Synodontis* species can produce audible sounds when they are removed from the water. It is said that these sounds—pig-like gruntings according to biologist U. de V. Pienaar writing in a recent issue of *African Aquarist*—are caused by the grating movements of the dorsal and pectoral fins in their sockets. In southern Africa these sound-producing species

are commonly referred to as squeakers. One of the best known squeakers inhabiting South African rivers is *S. zambeensis*. This species is looked upon as a kind of pest by anglers because it swarms in certain areas and robs the lines of the bait intended for other more worthy (as sport or food) fishes.

In general *Synodontis* species are easy to manage in captivity. They are hardy within their range of temperature (from the upper sixties to the middle eighties °F.) and will eat everything ordinarily acceptable to an omnivorous fish. They make good community fish, but like some of the so-called freshwater sharks (*Labeo* spp.) they sometimes fall out with one another and will cheivy their own kind. Indeed, some species of *Synodontis*, when large, will even drive away and appear to resent the presence of any other species of catfish.

A tank to suit *Synodontis* must be provided with at least

one shady retreat for the catfish to call its own and guard against intruders. For small specimens, an arbour formed of broad foliated plants will do, but for large specimens slivers of stone stood on end against the rear glass are recommended. *Synodontis* catfish often rest with the body propped head up against objects such as rockwork or hummocks of vegetation. They are more active at dusk or after dark; so food should always be introduced into the aquarium for their especial benefit after the other fishes (in a community tank, that is) have settled down for the night. It may be asked what are the breeding habits of these catfishes, and their sex distinctions? The books do not tell us, but it has been suggested somewhere (the source escapes me) that they probably deposit their eggs on stones, like some other catfishes, and that a female may be told apart from a male (of similar size or age, of course) by her greater girth.

## Waterlife pests and friends

# THE PONDWEED BUG

By Bill Simms

THIS is an unusual looking little bug that is not always easy to see for it is only about 3 millimetres long. But because it is the only representative of this family in Britain, and could cause concern when seen in an aquarium, it is worth some notice.

This bug, *Mesocelis furcata*, is mainly greenish-yellow with dark brown markings on the body, and it has long legs and antennae. It spends most of its time on the surface film of ponds, particularly where there are floating weed leaves, such as *Potamogeton natans*. Because of this it could easily be transported on vegetation brought into an aquarium. There is no need to be concerned about its appearance there, though, for it lives on minute creatures at the water surface and cannot harm our usual aquarium inmates. In fact, it may do a little good by destroying surface dwelling creatures too small for us to notice.

The adult females lay eggs in September on the stems of water plants just below the water surface by piercing the skin of the stem and inserting the eggs inside. In winter, when the plants die off and sink to the bottom, the eggs are carried down with them. *P. natans* is a favourite plant for this purpose.

During winter the surviving adults live on the pond banks,



hidden under leaves and other herbage. In spring the small larvae hatch from the eggs at the bottom and swim to the surface. There they adopt a predatory life like their parents, feeding on even smaller water creatures.

The five larval stages occur fairly rapidly because by July and August the new generation of pondweed bugs is produced from the fully developed larvae. Some of the adults have long wings and others are wingless. Wings appear to develop on those adults that have not found the living too good on the pond. With their aid the adults can fly off to a better feeding ground. In this way new ponds are colonised and the race is kept fit and healthy.

Because this creature is a bug it has piercing mouth-parts. With these the victim, after being grasped, is stabbed and its juices sucked out. This stabbing organ is not strong or long enough to pierce the skin of our hands (at least I have never felt a prick from one) but it is likely that if one was on a soft, thin part of our skin it would be felt.

If you find one living on your aquarium water surface you need not be unduly alarmed, but if it exists there for long you can take this as evidence that there are plenty of tiny creatures there for it to live on, even though you cannot see them.



# THE GENERIC NAMES: *BARBUS* AND *PUNTIUS*

Consequent upon the publication of Albert Klee's article, "The *Barbus* Question" in our February issue, Dr. Herbert Axelrod writes: "Though it has been many, many years since Dr. Schultz made his proposals, I have always followed his suggestions and have used his nomenclature in all my more recent books. It is common practice for writers to accept the recommendations of authorities in the field, such as Dr.

Schultz, unless they are qualified with scientific data to change these recommendations. Therefore, I deem Mr. Klee as unqualified to criticize Dr. Schultz and completely out of order in advising his readers that the vast majority of American ichthyologists agree with him." The article which follows is printed by courtesy of Dr. Axelrod and T.F.H. Publications Inc.

By Dr. Leonard P. Schultz, Curator of Fishes, U.S. National Museum

WIEBE AND DE BEAUFORT (The fishes of the Indo-Australian Archipelago, vol. 3, pp. 170-205, 1916) used the nominal genus *Puntius* Hamilton-Buchanan in place of *Barbus* Cuvier and Cloquet, for the cyprinids that are commonly called "barbs" by aquarists. However, the nomenclatorial and zoological facts concerning the use of *Puntius* and other generic names instead of *Barbus* for certain aquarium fishes has never been presented.

In the following discussion I shall develop the reasons, though complicated, why the genus *Barbus* cannot be applied correctly to any species of tropical aquarium fish. The "barbs" may be sub-divided at least tentatively, into three genera as proposed by Bleeker almost a century ago. Günther, Day and Boulenger were the authors who were mostly responsible for the misapplication of the nominal genus *Barbus* to a large group of African and Asiatic "barbs."

Cuvier and Cloquet (Dictionnaire des sciences naturelles, ed. 2, vol. 4, supp. p. 6, 1816) established the nominal genus *Barbus*, with *Barbus vulgaris* Cuvier and Cloquet proposed as a new name for *Cyprinus barbus* Linnaeus, a cyprinid fish from Europe.

The International Rules of Zoological Nomenclature in Article 30, I.d, state that "If a genus, without originally designated or indicated type (species) contains among its original species one possessing the generic name as its specific or subspecific name, either as valid name or synonym, that species or subspecies becomes *ipso facto* type of the genus, (Type by absolute tautonymy)."

Since *Cyprinus barbus* Linnaeus was listed as one of the species under the nominal genus *Barbus*, *C. barbus* is the type species by tautonymy.

Bleeker (Systema cyprinoideorum revisum, Ned. Tijdschr. Dierk., vol. 1, p. 198, 1863; Atlas ichthyologique . . . , vol. 3, p. 26, 1863) was the first to designate the "Spec. type." of *Barbus* Cuvier and Cloquet and he selected *Barbus fluviatilis* Cuvier, which is a synonym of *Cyprinus*

*barbus* Linnaeus. Thus it is well established that the type species of *Barbus* Cuvier and Cloquet 1816 is *Cyprinus barbus* Linnaeus.

Since the type species of *Barbus* is unquestionably *Barbus barbus* (Linnaeus), it is important to know by what characters this genus may be recognized. Some of these are as follows: Two pair of thick barbels, maxillary and rostral; pharyngeal teeth 4, 3, 2+2, 3, 4, all curved, hooked, and pointed; dorsal fin origin midway between snout tip and base of caudal fin; third dorsal ray, longest, bony, strong, and serrated along its posterior margin; gill membranes broadly joined to isthmus; scales small, about 35 to 38 rows in front of dorsal fin origin, 52 to 63 rows crossing lateral line; dorsal rays about iii, 8; anal iii, 5; pectoral about i, 16 or 17; pelvics i, 8 or 9; lateral line complete; vertebrae about 25 abdominal and 25 caudal totalling around 50.

The name *Barbus* has been used erroneously in ornithology in the generic sense by certain authors (Neave, Nomenclator Zoologicus, vol. 1, p. 393, 1939). Cuvier (Tableau Élémentaire de L'Histoire naturelle des animaux, p. 234, 1798) used the name "barbus" for a group of birds. However it is the opinion of ornithologists that the name "barbus" was not used in the generic sense, but instead as a common name. Myers (Stanford Ichthy. Bull., vol. 1, p. 170, 1940) states that "it is perfectly evident that 'barbus' of Cuvier 1798 is nothing more than the plural of Cuvier's vernacular appellation, 'barbus' for which birds Cuvier plainly uses the generic name *Bucco*." With that opinion I agree.

The nominal genus *Puntius* was established by Hamilton-Buchanan (An account of the fishes found in the River Ganges and its branches, p. 310, 1822). Since *Cyprinus punctatus* Hamilton-Buchanan was one of the species included under *Puntius*, by the rule of tautonymy it is the type species of the nominal genus *Puntius*, a parallel situation with that of *Barbus*.

Day (Proc. Zool. Soc. London, p. 100, 1870; The Fishes of

India, vol. 2, p. 582, pl. 145, fig. 6, 1879) redescribed *Barbus puntio* (*Cyprinus puntio* Hamilton-Buchanan). Hora and Mukerji (Rec. Indian Mus., vol. 36, pt. 3, pp. 369-370, fig. 6, 1934) also recognize this species as *Barbus puntio*, which definitely gives it taxonomic status.

Therefore *Puntius puntio* (Hamilton-Buchanan) is unquestionably the type species of the nominal genus *Puntius* and the latter genus must be characterized by the anatomical features possessed by its type species.

Some of the anatomical characters of *Puntius puntio* are: no barbels; number of pharyngeal teeth not recorded; dorsal fin origin slightly closer to tip of snout than to base of caudal fin; the third dorsal "spine" bony, smooth and without serrations; gill membranes joined to isthmus; scales are large, about 11 or 12 in. front of dorsal fin, and about 22 or 23 scale rows cross the lateral line; dorsal rays iii, 8; pectoral i, 14; pelvics i, 8; anal iii, 5; lateral line present, complete or incomplete.

Hora and Mukerji (l.c. p. 370) state that "*Barbus terio*" is closely allied to *puntio*, but the two species differ in certain body proportions, coloration and the extent of the lateral line.

Dr. H. M. Smith (U.S. Nat. Mus. Bull. 188, p. 165, 1945) called attention to the action of Bleeker (Atlas Ichthyologique, vol. 3, p. 27, 1863; Ned. Tijdschr. Dierk., vol. 1, p. 200, 1863) who established 3 subgenera under the genus *Puntius*, with *Cyprinus (Puntius) sophore* Hamilton-Buchanan as type species of *Puntius*.

Bleeker's action for *Puntius* does not appear to be valid according to the International Rules of Zoological Nomenclature because (1) by tautonymy *Cyprinus puntio* Linnaeus is the type species and not *C. sophore*; (2) since *sophore* has 4 barbels it should not have been designated as the type species of *Puntius* which has no barbels according to Bleeker's diagnosis of his three subgenera, as follows:

*Barbodes* Bleeker, with 4 barbels (type species *Barbodes belinka* Bleeker).

*Capoeta* Cuvier and Valenciennes, with 2 barbels, type species *Capoeta amphibia* Cuvier and Valenciennes.

*Puntius* Hamilton-Buchanan, with no barbels.

The nominal genus *Capoeta* Cuvier and Valenciennes (Histoire naturelle des poissons, vol. 16, p. 278, 1842) was established with only three species assigned to it. Bleeker (l.c. p. 27) designated as type species *C. amphibia* Cuvier and Valenciennes which comes from Bombay. Bleeker's designation appears to be correct nomenclatorially since Cuvier and Valenciennes do not list even as a synonym, *Barbus capoeta* Cuvier and Cloquet.

The nominal genus *Barbodes* was established by Bleeker (Natuurk. Tijdschr. Ned. Ind., vol. 20, p. 431, 1859; Acta Soc. Sci. Ind. Ned., vol. 7, pp. 267, 275, 316, 1860) and Bleeker (l.c. p. 27, 1863) designated the type species of *Barbodes* as *B. belinka* Bleeker, which also appears to be correct nomenclatorially.

It is concluded therefore, that the genus *Barbus*, contains those cyprinid fishes of Europe with numerous (about 45 or more) small scales; numerous (about 50) vertebrae; and with 4 barbels, whereas the genus *Puntius* contains those cyprinid fishes of tropical Asia and Africa, with large scales of moderate number probably 17 to 33; vertebrae about 25 to 30 and no barbels.

This division leaves a large number of species formerly known as "barbs" that do not fit exactly into the genus

*Puntius*. Among those with large scales (also about 17 to 33) and moderate numbers of vertebrae as in *Puntius puntio*, the following generic divisions would apply as set up by Bleeker, who dubbed them as subgenera.

Those species with four barbels should be assigned the generic name *Barbodes* Bleeker, whereas those with two barbels would belong to *Capoeta* Cuvier and Valenciennes. This arrangement may be artificial and somewhat tentative but it is the best that can be done at the moment. Before more permanent conclusions can be reached extensive studies are required on the African and Asiatic "barbs" to untangle the mess resulting from earlier misunderstanding of the type species of *Barbus*, *Punctius*, *Capoeta*, *Barbodes* and other related nominal genera. These studies when completed may reallocate some of the species of "barbs" to genera other than those mentioned here.

Under the above arrangement various aquarium fishes in addition to the type species, should be assigned to genera as follows:

No barbels		Continent where found
<i>Puntius</i>	<i>cinchonius</i> (Hamilton-Buchanan)	Asiatic
"	<i>cuttingi</i> (Günther)	Asiatic
"	<i>filamentosa</i> (Cuvier and Valenciennes)	Asiatic
"	<i>galius</i> (Hamilton-Buchanan)	Asiatic
"	<i>lineatus</i> (Duncker)	Asiatic
"	<i>microfasciatus</i> (Günther)	Asiatic
"	<i>phoeniceus</i> (Hamilton-Buchanan)	Asiatic
"	<i>sachsi</i> (Ahl)	Asiatic
"	<i>stoliczkaei</i> (Day)	Asiatic
"	<i>stigma</i> (Cuvier and Valenciennes)	Asiatic
"	<i>terio</i> (Hamilton-Buchanan)	Asiatic
"	<i>tinca</i> (Hamilton-Buchanan)	Asiatic
"	<i>vitatus</i> (Day)	Asiatic
Two barbels		
<i>Capoeta</i>	<i>chola</i> (Hamilton-Buchanan)	Asiatic
"	<i>oligolepis</i> Bleeker	Asiatic
"	<i>partipentazona</i> (Fowler)	Asiatic
"	<i>semifasciatus</i> (Günther)	Asiatic
"	<i>tetrazona</i> Bleeker	Asiatic
"	<i>nitisa</i> (Deraniyagala)	Asiatic
Four barbels		
<i>Barbodes</i>	<i>bivittatus</i> (Cuvier and Valenciennes)	Asiatic
"	<i>callipterus</i> (Boulenger)	African
"	<i>campocanthus</i> (Bleeker)	African
"	<i>dorsimaculatus</i> (Ahl)	Asiatic
"	<i>dunckeri</i> (Ahl)	Asiatic
"	<i>meretti</i> (Boulenger)	Asiatic
"	<i>fasciatus</i> (Bleeker)	Asiatic
"	<i>fasciolatus</i> (Günther)	African
"	<i>hexazona</i> (Weber and de Beaufort)	Asiatic
"	<i>holotamia</i> (Boulenger)	African
"	<i>lateristriata</i> (Cuvier and Valenciennes)	Asiatic
"	<i>paludinosus</i> (Peters)	African
"	<i>pentazona</i> (Boulenger)	Asiatic
"	<i>sevivimensis</i> (Cuvier and Valenciennes)	African
"	<i>tripilis</i> Bleeker	African
"	<i>unitamiatu</i> (Günther)	African
"	<i>usambarae</i> (Lönnerberg)	African
"	<i>wernerii</i> (Boulenger)	African
"	<i>velleri</i> (Ahl)	Asiatic

## A Review of NEW FILTERS AND PUMPS

"AIRSTREAM" filters are British made, and the range of three is made by Inter-Pet, of Dorking, Surrey.

The three models available in the "Airstream" range are: "The Airstream Slimline", costing 12s. 6d., "The Airstream Super Twin", at 29s. 6d., and "The New Airstream Cascade", price 25s.

The Slimline filter is a compact model, suitable for the smaller aquarium. It can be used where space behind or beside the aquarium is limited, having a breadth of only 2 in. Being so slim, this model may also be used inside the tank. Like the other two models, the Slimline has adjustable hanger supports which will fit tanks with a narrow or wide frame, up to 1½ in. wide. It has one siphon and one air-lift, and these may be used at either side of the filter box.

Model number two, the Cascade, is suitable for the larger aquarium. Although similar to the above, it has diffuser action which aerates the aquarium water, as well as giving twice the flow of water as the Slimline model. It is supplied with two siphons which may be placed at any points of entry to the filter box. Being of different lengths, the siphons remove water from both the base of the aquarium and the mid-tank level.

The Super Twin model has also got aeration action, and has twin outlets from the diffuser stone, and twin siphons. This combination gives good over-all circulation of the aquarium water, and having a larger filter box—11½ in. × 2½ in. at the top—it provides a large filtering surface area. Its hangers are adjustable for aquaria up to 2 in. in frame width. These are three useful filters, and being British made, the full price goes into the filter.

"Esha" aquatic pumps are manufactured by a West

German firm of precision engineers, and are marketed by Gazelle Plastics Ltd., of Bridgwater, Somerset.

The "Esha" range of pumps consists of four models which are rather more expensive than the more commonly available types of pumps, but they are really silent in operation, and give a high air output. Being precision instruments, each of the pumps in the range is fitted with an air-filter cartridge common to all sizes, and this ensures that only clean air can enter the pumps' intricate mechanism. The air-filter cartridge absorbs impurities from the air, and it must be changed every three to six months, depending upon use and atmospheric pollution, when the filter cartridge has absorbed its maximum amount of impurities. New cartridges are inexpensive, and the pump should not be operated without a filter cartridge. Pumps are fitted with a special diaphragm.

The distributors are so convinced of the performance of their pumps, that they do not issue the usual guarantee, limited in its scope, but rely on English common law, which is the best safeguard for the purchaser. Despite this, the distributors will, for a period of six months, replace any part which can be proved to have a manufacturing fault due to either material or bad workmanship. Pumps may be serviced at cost, after extensive use.

The models available are: Model 200 which gives an output of 160 litres (5.72 cu. ft.) per hour—price £4 15s. 0d.; Model 300 which supplies 320 litres (11.30 cu. ft.) per hour—price £8 0s. 0d. Another version of Model 300 has a regulator fitted, and it provides 300 litres (10.59 cu. ft.) of air per hour, and costs £9 9s. 0d. Model 400 has a regulator fitted, supplies 400 litres (14.13 cu. ft.) of air per hour, and costs £10 10s. 0d. B.W.

### AWARDS FOR THE CHAMPION OF CHAMPIONS CONTEST

Below are the awards which are being presented at the British Aquarists' Festival, Manchester, on 18th & 19th October, 1969, to the winners of the Champion of Champions Contest.



#### 1st Award

A Half-marked 9 ct. gold lapel pin in the shape of "The Aquarist" badge inscribed—"Champion of Champions". A cash prize of twenty guineas together with an inscribed plaque, mounted on a hand-made Indian Rosewood back.

#### 2nd Award

A cash prize of thirteen guineas and inscribed plaque mounted on a hand-made Indian Rosewood back.

#### 3rd Award

A cash prize of seven guineas and a plaque similar to that of the second prize.

The entries for this contest represent the finest display of fish in the Country and are all winners of the "Best Fish in the Show" award which have been held throughout the country. Every entrant has received a gold-plated lapel pin as illustrated.





# from AQUARISTS' SOCIETIES

Monthly reports from Secretaries of aquarists' societies for inclusion on this page should reach the Editor by the 5th of the month preceding the month of publication.

THE first open show organized by **Bedworth Aquarist and Pool Society** was an overwhelming success with more than 612 entries and 700 spectators.

Among those who exhibited were members of 23 other societies in the Midlands and a few others coming from as far afield as Huddersfield, Southport, the North and London.

In four classes entries were so good that the judges recommended that extra awards should be made. The most exceptional class was for Characins up to 3 in. in which there were 63 entries.

Awards were presented by the chairman of Bedworth U.D.C., Mrs. C. W. Ward, and her lady, Miss A. Ward.

Award winners were as follows:—

Guppy: 1, Mr. Mason (Northampton); 2, Mr. S. Dean, T.K.A. (Tamworth Killie Association); 3, Mr. Bloxham (Nuneaton); 4, Mr. Ormesher (Southport). A.O.V. Livebearer: 1, Mr. and Mrs. Jones (Bedworth); 2, Mr. R. Trippas (North Warks.); 3, Mr. Smith (Hampstead); 4, Master T. Swadling (Daventry). Characins (up to 3 in.): 1, Edkins and Paggett (Nuneaton); 2, Mr. Smith (Hampstead); 3, Mr. Ellis B.K.A. (British Killie Association); 4, Mr. Haines (Nuneaton). Characins (over 3 in.): 1, Mr. R. Tedds (Bedworth); 2, Mr. Gregory (Haden); 3, Mr. Robinson (Northampton); 4, R. J. Hough (North Warks.). Barbs (up to 3 in.): 1, K. Binns (Nottingham); 2, L. Ball (Atherstone); 3, Mr. Robinson (Northampton); 4, B. C. Roberts (Independent). Barbs (over 3 in.): 1, Mr. Wilkes (Haden); 2, Mr. Moore (Leicester); 3, R. J. Hough (North Warks.); 4, S. Dean (Tamworth Killie Association). Cichlids (up to 4 in.): 1, Mr. and Mrs. Simpson (Bedworth); 2, Mr. Edwards (Northampton); 3, B. C. Roberts (Independent); 4, M. Ashby (Bedworth). Cichlids (over 4 in.): 1, Mr. Treadgold (Stroud); 2, Mr. Ormesher (Southport); 3, R. Tedds (Bedworth); 4, Edkins and Paggett (Nuneaton). A.V. Anabantids: 1, Mr. Wilkes (Haden); 2, Mr. Thompson (Loughborough); 3, L. Kaye (Top Ten); 4, G. Steed (Tamworth Killie Association). Corydoras Catfish: 1, W. Jones (Tamworth); 2, Mrs. S. Leigh (Nuneaton); 3, Mr. and Mrs. Cox (Nuneaton); 4, Mr. Thompson (Loughborough). A.O.V. Catfish: 1, Mr. Gregory (Haden); 2, G. Steed (Tamworth Killie Association); 3, R. Shakespeare (Bedworth); 4, Mr. Moore (Leicester). Killifish: 1, G. Steed (Tamworth Killie Association); 2 and 3, Mr. Mallaratt (B.K.A.); 4, Mr. Purdy (Loughborough). Rasboras, Danios, W.C.M.M.: 1, R. Shakespeare (Bedworth); 2, Mr. Trotman (Atherstone); 3, J. Yates (Tamworth Killie Association); 4, Mr. and Mrs. Cox (Nuneaton). A.O.V. Tropical: 1, B. Devison (Wednesbury); 2, W. Jones (Tamworth); 3, Mr. Bloxham

(Nuneaton); 4, Mr. Haywell (Loughborough). Livebearers Pairs: 1, J. Housden (Bedworth); 2, Mr. and Mrs. Jones (Bedworth); 3, Mr. Trotman (Atherstone); 4, Mr. and Mrs. Jones (Bedworth). Egg-layers Pairs: 1, T. Sheehy (Coventry); 2, Mr. Underwood (Leamington); 3, L. Ball (Atherstone); 4, Mr. Haines (Independent). Breeders Livebearers: 1, Mr. Trippas (North Warks.); 2 and 3, Mr. Walker (Loughborough); 4, Mr. and Mrs. Jones (Bedworth). Breeders Egg-layers: 1, Mr. Walker (Loughborough); 2, Mr. Farley (Independent); 3, Mr. Haines (Independent); 4, Mrs. S. Leigh (Nuneaton). Fancy Goldfish: 1, Mr. Buggin (Bedworth); 2, Mr. Bromfield (Coventry); 3, Mrs. S. Leigh (Nuneaton); 4, Mr. Blimfield (Coventry). A.O.V. Goldwater: 1, Mr. Haines (Nuneaton); 2, Master D. Beard (Leamington); 3, Mr. and Mrs. G. Cox (Nuneaton); 4, R. J. Hough (North Warks.). Best Fish in Show: B. Devison (Red Tail Black Shark). Best Large Fish (other than best in Show): R. Tedds (Meynham). Best Small Fish (other than best in Show): W. Jones (Corydoras Catfish). Society with most entries (Bedworth not eligible): Nuneaton. Person with most entries: Edkins & Paggett (Nuneaton). Society with most points (Bedworth not eligible): Nuneaton. Person with the most points: Mr. and Mrs. K. Jones (Bedworth).

FOR their end of August meeting the **North Kent A.S.** enjoyed a very interesting quiz given by B. Bloss and C. Hunter. The Table Show was Killifish.

The date very much in mind at the moment is 7th October, when the Society will be holding the Annual Inter-Club Show. More clubs have been invited this year and if past shows are anything to go by, it promises to be a very full and entertaining evening. For further information please apply to the Club Secretary: B. Bloss, 11 Lane Avenue, Greenhithe, Kent.

THE third quarterly members' table show of **Swillington A.S.** was held recently, with R. M. Faircliff and A. H. Whitehead of Tadcaster judging the exhibits. Full results were as follows:

Dwarf Cichlids: 1 and 3, G. Binks; 2, P. Reynolds. Large Cichlids: 1 and 3, H. Wimbles; 2, R. Stringer. Toothcarps: 1, D. Sharp; 2, G. Binks; 3, P. Reynolds. Barbs: 1, R. Stringer; 2, P. Reynolds. Breeders (Egg-layers): 1, G. Binks; 2, P. Reynolds. Breeders (Livebearers): 1, R. Stringer; 2, G. Binks. Best in Show went to G. Binks for an Apistogramma Agassiz and he also received the John Lamb Trophy for Dwarf Cichlids, and the St. Marks Trophy for Breeders (Egg-layers). R. Stringer received the Clive Mills Trophy for Breeders (Livebearers), and the Richardson Pet Shop Trophy for Small Barbs. H. Wimbles received the J. & M. Linden Trophy for Large cichlids, and D. Sharp received the Julia & Michael Emmett Trophy for Toothcarps. The fifth annual open table show will be held on 21st June, 1970.

AT the last quarterly meeting of the **Goldfish Society of Great Britain** a talk was given by R. Whittington on fish house construction. Favourable comments were made by J. Lightcap, secretary of the American Goldfish Society, who

is also a member of the G.S.G.B. A Breeders Show was also held for matched pairs of fish bred in 1968. The judge was R. D. Eason and the results were as follows: Moss Morris (Single Tail) 76 points Class A; J. Linale (Twin Tail) 80 points Class B; B. Herbert (Globe Eye) 81 points Class C; Mrs. C. Smith (Pearl-eye) 82 points Class D. Breeders Cup winner Mrs. C. Smith.

A VERY successful show was held by **Walthamstow and District A.S.** in conjunction with a special children's gala day organised by the Waltham Forest Borough Council in August. The Show was supported by Bethnal Green A.S., Chingford A.S., Enfield A.S. and Tottenham A.S. and was judged by C. Creed and E. R. Nicholl. Results were as follows:

Club Furnished Aquaria: 1, Walthamstow; 2, Tottenham; 3, Enfield; 4, Chingford. Single Tail Goldfish: 1 and 2, D. Goodbody (W); 3 and 4, R. Elden (T). Barbs: 1 and 2, R. Taylor (W); 3, A. Hove (E); 4, T. Sumner (C). Characins: 1, F. Tomkin (BG); 2 and 3, J. Whittaker (E); 4, B. Martin (BG). Pairs (Egg-layers): 1, R. Taylor (W); 2 and 4, B. Martin (BG); 3, J. Whittaker (E). Pairs (Livebearers): 1, B. Mather (W); 2, J. Gibbs (C); 3, D. Pirou (C); 4, K. Nutt (T). Fighters: 1, W. Collins (W); 2, M. Parmenter (W); 3, P. Young (W); 4, D. Watts (E). Guppies: 1 and 4, M. Macarantionnaigh (T); 2, C. Stott (W); 3, F. Allard (C). Plants: 1 and 2, Mrs. J. Stott (W); 3, B. Mather (W); 4, D. Goodbody (W).

OVER the Bank Holiday weekend, **Ealing & District A.S.** put on a display stand in conjunction with the Southall Show.

Six furnished tanks were on show, and great interest was shown in this exhibit. C. Ankin, the Society's "disease expert" was kept busy dispensing medicinal advice, and other members were answering many questions from the visitors, the most common question being "How do I get rid of green algae on my plants?" Many people showed interest in the Club's activities, and it was a good opportunity to plug the Club's forthcoming Open Show.

Recent speakers at the Club have been Bert Villiers, the tubercle hunter, who entertained the Club with his reminiscences, and a member of the I.M.S.S., who gave a further talk on marine fishkeeping.

Now that the summer holiday season is drawing to a close, more activity should be evident on the breeders' front, recent additions being Piremouths, Brown Acanas, "Schubert" Barbs and two successive spawnings of Discus.

THE awards for the entries in the **Midland Aquarium & Pool Society Annual Show** were as follows:

Coldwater. Class 1—Common Goldfish and Comets: 1, D. Wilson; 2, H. T. Jago; 3, S. Lloyd. Class 2—Breeders' Class Fancy Twin Tails: 1, R. Berry; 2, A. E. Roberts; 3, S. Lloyd. Class 3—Breeders' Class Fancy Goldfish: 1, S. Lloyd; 2, G. J. Bell. Class 4—British Shubunkins: 1, K. Jaxon; 2, I. Pond; 3, E. A. Mason. Class 5—Calico Veils: 1 and 2, A. W. Smith; 3, H. T. Jago. Class 6—Shubunkins bred 1969: 1, H. J. Whiting; 2 and 3, S. Lloyd. Class 7—Scaled Veils: 1, S. Lloyd; 2, S. Young. Class 8—Twinstails: 1, 2 and 3, A. E. Roberts. Class 9—Shubunkins bred 1969: 1, C. H. Barrett; 2, H. T. Jago; 3, H. J. Whiting. Class 10—Calico Veils: 1, H. T. Jago; 2 and 3, A. E. Roberts. Class 11—Shubunkins, matched pairs: 1, C. H. Barrett; 2, H. T. Jago; 3, H. H. Bell. Class 12—Orandas: 1, C. H. Barrett; 2, K. Jaxon; 3, E. A. Mason. Class 13—Telescopes: 1 and 2, H. T. Jago; 2, A. E. Roberts. Class 14—Moors: 1, H. T. Jago; 2, K. Jaxon; 3, A. E. Roberts. Class 15—Shubunkins under 3 in.: 1 and 2, K. Jaxon; 3, C. H. Barrett. Class 16—Calico Fantails: 1 and 2, C. H. Barrett; 2, H. T. Jago. Class 17—Scaled Fantails: 1, S. Lloyd; 2, E. A. Mason; 3, I. Mildon. Class 18—Pond or River Fish: 1 and 3, A. R. Haddon; 2, K. J. Hough. Class 19—Decorative Cold Water Aquariums: 1, T. Young; 2, S. Dean. Class 20—Inter-

 **A FRACTION A DAY, KEEPS ALGAE AWAY**  
Hillside Aquatics London N12

Society Decorative Coldwater Aquariums: 1, Coventry P.A.S.; 2, Tamworth A.G. Class 21—Shubunkins under 5 in.: 1, 2 and 3, H. H. Bell.

Tropical. Class 22—Barbs (true pairs): 1, L. Skinner; 2 and 3, R. Trippas. Class 23—Barbs Tetras: 1, P. Skinner; 2, R. J. Ought; 3, F. Bolton. Class 24—Barbs, Others: 1, L. G. Wilkes; 2, P. Massey; 3, P. Skimmer. Class 25—Danios: 1, K. Wells; 2, A. R. Haddon; 3, P. W. Ellis. Class 26—Rasboras: 1, F. Massey; 2, J. B. Cobwell; 3, I. Ford. Class 27—Characins. Class 28—Characins: 1, R. J. Ought; 2, I. Ford. Class 29—Males: 1, P. W. Jinks; 2, R. J. Hough. Class 30—Male Anabantids: 1, J. D. Follows; 2, K. K. Wells; 3, L. G. Wilkes. Class 31—Cichlids under 3 in.: 1, P. Bolton; 2 and 3, R. Woodward. Class 32—Cichlids over 3 in.: 1, S. Dean; 2, R. J. Hough; 3, V. Cunn. Class 33—Angels: 1, R. Trippas; 2, K. Wells; 3, L. G. Wilkes. Class 34—Male Oscars: 1, R. Whitfield; 2, T. A. Nason; 3, R. Trippas. Class 35—Mollies: 1, K. Wells; 2 and 3, R. Trippas. Class 36—Platies: 1, R. Trippas; 2, C. Nightingale; 3, J. Wain. Class 37—Swordtails: 1, I. Ford; 2 and 3, R. Trippas. Class 38—A.O.V. (single): 1 and 3, W. Devison; 2, K. Atwood. Class 39—Egg-layers: 1, W. Devison; 2, J. B. Cobwell; 3, R. Trippas. Class 40—Livebearers: 1 and 2, R. Trippas; 3, W. Devison. Class 41—Catfish: 1, C. J. Nightingale; 2, P. W. Jinks; 3, S. Green. Class 42—Loachies: 1, J. D. Follows; 2 and 3, P. W. Ellis. Class 43—Characins: 1, N. Furness; 2, S. Green; 3, A. Massey. Class 44—Danios: 1, S. Green; 2 and 3, N. Furness. Class 45—Any Barbs (novices): 1, M. Youngman; 2, A. Massey; 3, S. Green. Class 46—Livebearers (novices): 1, M. Bates; 2, G. Parker; 3, H. Youngman. Class 47—Male Anabantids: 1 and 2, S. Green; 3, S. Follows. Class 48—Decorative Tropical Aquarium: 1, S. Dean; 2 and 3, A. Thomson. Class 49—Inter-Society Decorative Aquariums: 1, Haden A.S.; 2, Tamworth A.G.; 3, Nantassan A.S. Class 50—Inter-Society Competitors Display: 1, Tamworth A.G.; 2, F.G.A., Birmingham; 3, North Warwickshire A.S. Class 51—Aquarium Plant: 1 and 3, M. Allen; 2, R. G. Leadley. Class 52—Reptiles: 1, J. Tranner; 2, D. Hope; 3, W. Prosser.

AT the August meeting of the Bournemouth Aquarists Club, members and their guests heard the Club's Secretary, Ron Masley give a talk on breeding the Barbs and Characins. Len James was chairman of the meeting, in the absence of Mr. Coombes, who was on holiday. During the interval a raffle was held, and afterwards, an auction. The Table Show was judged by Jack Jeffery, with the results:

A.V. Cichlids: 1, Mr. Watkins (Angels); 2, Mr. Watkins (Firemouth); 3, Mr. Mansfield (Jewel Cichlid).

AT the seventh Annual Show of the Newport A.S., the cup for the Best Fish in Show was won by a junior exhibitor, Miss Helen Jones of the Llantwit A.S. In addition she also received "The Aquarist" gold pin and a trophy for the Best Junior Exhibit. Other award winners were: Best Breeders Team and Best Guppy Cup: J. Wheeler. Best Barb: F. Brown. Best Corydoras Catfish: Mrs. C. Little. Best A.O.V. Egg-layer: R. W. Hill. Best Coldwater Fish: B. A. Harding. Furnished Aquaria Cup: J. Lowndes. The Cup for the highest aggregate points in show was won by D. Warmeant.

Results. Siamese Fighters: 1, F. Brown; 2, J. Wheeler. Anabantids: 1, D. Warmeant; 2, R. W. Hill; 3, B. A. Harding. Barbs: 1, F. Brown; 2, Mr. Trotman; 3, R. W. Hill; 4, D. Warmeant. Hemigrammus and Hypoclinemus: 1, F. Brown; 2, Mrs. G. Phillips; 3, B. Harding; 4, J. Lowndes. A.O.V. Characins: 1, B. Harding; 2, F. Brown; 3, Mr. Underhill; 4, Mr. Ward. Angels: 1 and 2, Mr. Boof. Dwarf Cichlids: 1, Mr. G. James; 2, P. Jackson; 3 and 4, D. Warmeant. A.O.V. Cichlid: 1, Mr. Treadgold; 2, D. Warmeant; 3, R. Dyer; 4, Mrs. C. Little. Corydoras Catfish: 1, Mrs. C. Little; 2, F. Brown; 3, B. Harding; 4, Mr.

Warmeant. A.O.V. Catfish: 1, J. Wheeler; 2, Mrs. C. Little. Danios, Rasboras and White Cloud Mountain Minnows: 1, D. Warmeant; 2, R. W. Hill; 3, Mrs. C. Little; 4, F. Brown. A.O.V. Egg-layer: 1, R. W. Hill; 2, Mrs. C. Little; 3, Mr. Hill; 4, F. Brown. Swordtails: 1, Mr. Hill; 2, Mrs. C. Little; 3, Mr. Wilkie; 4, B. Spinks. Platies: 1 and 4, F. Brown; 2, Mr. Warmeant; 3, J. Overland. Mollies: 1 and 2, Mrs. C. Little; 3, Mrs. P. Harding; 4, B. Harding. Guppies: Male: 1 and 2, J. Wheeler; 3, D. Bishop; 4, Mr. Goldsmith. Female: 1 and 2, J. Wheeler; 3 and 4, Mr. Hill. Breeders Livebearers: 1, Mr. Wheeler; 2 and 4, B. Harding; 3, C. Harding. Breeders Egg-layers: 1, F. Brown; 2 and 3, Mr. Wheeler; 4, Mr. Wilkie. A.V. Coldwater: 1, 2, 3 and 4, B. Harding Junior A.V. Egg-layer: 1, Miss H. Jones; 2, B. Roberts; 3 and 4, J. Walker. Junior A.V. Livebearer: 1, R. Jones; 2 and 3, B. Rowlands; 4, Miss S. Little. Furnished Aquaria: 1, J. Lowndes; 2, Mrs. J. Overland; 3, N. Newbery; 4, G. James.

AT the August meeting of the South Derbyshire & District A.S. H. King of Nuneston A.S. judged the Table Show for Characins and Cichlids and the results were as follows:

Characins: 1 and 3, J. Hunt; 2, R. Brabbin; 4, A. Clarke. Cichlids: 1 and 4, T. Bowler; 2, N. Fern; 3, J. Hunt.

THE Hucknall and Bulwell A.S. have made a very interesting Slide and Tape Show of members and their tanks in the Club's Home Tank Competition and each member has been interviewed on tape. Further details are available from Mr. Harrington, 5 Greenwood Vale, Hucknall, Notts.

THE agenda for the August meeting of the Amesbury & District A.S. was a short general meeting, an auction, a bottle show and a raffle.

As the Society has now been formed for six months it was decided at the meeting that the elected Committee draft a constitution for the Society. A decision was also made to split the combined offices of Secretary and Treasurer. The new Treasurer elected was P. Pogram of 28 Beaulieu Road, Amesbury.

The auction provided good entertainment as well as a useful boost to Club funds. The items auctioned ranged from a cactus plant to a giant snakehead. The bottle show comprised of two classes, the results of which were: Danios, Rasboras and Minnows: 1 and 2, Mr. Harvey; 3 and 4, Mr. Elliott. A.V. Catfish: 1, Mr. Lane; 2, Mr. Barron; 3, Mr. Smith; 4, Mr. Elliott.

OWING to the non-arrival of the invited guest speaker at the August meeting of the Harlech A.S., society member Stan Nelson was called upon at very short notice to deliver an address on his experiences in the keeping of tropical marine fish. The outcome was a most enjoyable lecture, which probably received the longest applause ever given by Harlech members. The table show for sexed pairs, divided into egg-layers and livebearers was won in both classes by P. Bralley.

The Society is now pressing ahead with arrangements for its 1979 programme of meetings, and among those who have already accepted invitations to address members are A. G. Jessop (Chairman, Federation of British Aquatic Societies), D. G. Williams (Deputy Curator and Zoologist, Heronian Museum, London), Gerald Jennings (former Director, International Marine Study Society), R. I. Millicamp (Fisheries Officer, Usk River Authority) and Gwyn Ellis (Assistant Keeper of Botany, National Museum of Wales). Meetings are held on the third Tuesday of each month at the Gabaia Junior School, Colwell Road, Cardiff (7.30 p.m.). The Secretary is M. J. Parry, 57 Caerw Court Road, Ely, Cardiff.

MEMBERS of the Hampstead & District A.S. have enjoyed a varied series of lectures, ranging from Brine Shrimp hatching to the keeping of Piranhas from Len Smith who has recently become resident lecturer. The Society

meets every second Wednesday, and all are welcome at Bacon Residents Hall, Lismore Circus, N.W.5.

MEMBERS and friends of the go-ahead Merseyside A.S. have certainly been favoured with an imposing list of aquatic lecturers at their recent meetings. In June Jim Kelly gave a slide-tape lecture "American Tour" part one—a most interesting record of his visit to the New World. Early in July Alan Bland, Chairman of the Hoylake A.S., an experienced breeder of many years' standing, gave a very instructive talk on breeding several species, and again in July the guest speaker was Eric Hardy the well-known naturalist. Before his talk he congratulated the Society on its steady growth and enthusiasm and mentioned how he was impressed by the Society's exhibit at the Liverpool Show. His subject was "The Changing Plant Life of Canals, Ponds and Inland Waterways," and he followed his talk with slide pictures of many species of plants.

THREE new members turned up at the last meeting of Tonbridge & District A.S. to hear a talk by John Marshall, Chairman of Medway A.S., and to see some of his slides of plants and fish houses. Mr. Marshall and his colleague Mr. Elliott judged the table shows with the following results:—Platies: 1 and 2, J. Bellingham; 3, Mrs. I. Bellingham. A.O.V. Labyrinths: 1 and 3, Mrs. D. Mathieson; 2, J. Bellingham; 4, Mrs. I. Bellingham. This was the last meeting in the existing premises. Future meetings will be in The Gardeners Arms, St. Stephens Street, Tonbridge, at 8 p.m. on the second Wednesday of each month, and new members will always be made welcome.

THERE has been a change of Secretary in Glossop A.S. The new Secretary is Miss D. Smith, 3 Chapel Lane, Hatfield, via Hyde, Cheshire, SK14 7PG. The Society also apologises to all the Societies who were unaware of the change in the date of the Open Show in June.

THE Annual Open Show of the Llantwit Major A.S. was held recently with the following results. The plaque for the Best Fish in the show was awarded to Mrs. F. Kimber of Heston, and plaques were awarded to R. Hill for Best Live Bearer; B. A. Harding, Breeders Live Bearers; R. Wilkie, for Breeders Egg Layers; S. Nelson, Furnished Aquaria; Miss Player, Best Junior.

Class Results. Fighters: A. Ibbertson. Labyrinths: 1, D. Warmeant; 2 and 3, B. A. Harding; 4, A. Ibbertson. Characins H. & W.: 1, Mrs. P. Kimber; 2, A. Hoare; 3, A. Ibbertson. A.O.V. Characins: 1, R. S. Wigg; 2 and 3, D. Songhurst. Barbs: 1, C. Penny; 2 and 4, D. Warmeant; 3, R. S. Wigg. Guppy (male): 1, P. Player; 2, R. S. Wigg; 3, R. Hill. Guppy (female): 1 and 3, P. Player; 2, R. S. Wigg. Platies: 1, R. Hoare; 2, R. Rogers; 3, A. Ibbertson. Swordtails: 1, R. Hill; 2, A. Rutter; 3, R. Hoare. Mollies: 1 and 2, B. A. Harding; 3 and 4, C. Harding. Catfish and Loaches: 1, R. Hill; 2, A. Ibbertson; 3, C. Penny; 4, I. Scudamore. Corydoras: 1, 3 and 4, R. A. Harding; 2, D. Warmeant. Dwarf Cichlids: 1, C. Barber; 2, J. Almsdi; 3, I. Rutter; 4, A. Payne. A.V. Cichlids: 1, A. Payne; 2, C. Barber; 3, J. Thomson. Danios and Rasboras: 1, A. Payne; 2, C. Harding; 3, D. Warmeant; 4, R. Hill. Killifish: 1, 2 and 4, G. Churchill; 3, M. Good. A.O.V. Egg-layers: 1, P. Player; 2, R. Hill; 3, A. Ibbertson. Breeders (Livebearers): 1, B. A. Harding; 2, F. Spence; 3, P. Player. Breeders (Egg-

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THE AQUARIST

Layers): 1, R. Wilkie; 2, C. Churchill; 3, C. Barber. Angel Fish: 1, C. Pearce; 2, A. Jewell. Junior (Jugger): 1, Miss Payer; 2, B. Roberts; 3, C. Pass; 4, H. Jones. Junior (Livebearers): 1 and 3, Brooks; 2 and 4, H. Rowlands. Seed Pairs: 1, D. Hayer; 2, C. Harding; 3, D. Songhurst. Furnished Aquaria: 1 and 2, S. Nelson.

The Officers elected at the annual meeting were as follows: Chairman, G. Vinnicombe; Vice-Chairman, A. Lewis; Secretary and Treasurer, R. S. Wigg; Show Secretary, W. H. Pugh; Assistant Show Secretary, A. Ibbertson; Auditor, K. Farant; Librarian, Mrs. M. Jones. The Chairman was pleased to welcome Mr., Mrs. and Miss Edwards, also Mr. and Mrs. Ireland as new members. The Secretary reported on his arrangements for a programme for the winter meetings, which included slides with taped lectures, 16 m.m. films, a talk on our local fresh water fish, and the annual dinner on 11th October. He also reported that Miss H. Jones had won Best Fish in the Show at Newport. Meetings are held the second Tuesday in the month, new members are made welcome.

**THE summer programme of Chester & District A.S.** commenced in April with an enlightening talk by Vic Partington on his own personal experiences of keeping tropical marines together with a fascinating film on coral life. As a complete contrast Garden Pond Construction was the subject of the following meeting; M. Jones, a Society member, outlined the building of his own pond, suitable plants and the stocking of cold water fish. This talk was further illustrated by an excellent slide show and written commentary hired from Highland Water Gardens, Rickmansworth, Herts. In May Dr. J. C. Chubb from Liverpool University explained, with the aid of the slides, the life cycles and effects of the many parasites which can attack fish kept in the aquarium. An extensive lecture was given by Ron Tench from Shaw, Oldham, on fish foods and feeding; visual aids describing the various commercial products and cultures available to the aquarist together with foods from the "kitchen" completed this informative talk. In June a Society member, R. Dutton, gave a talk on cichlids, large and small, together with slides of his own fish. A local naturalist, B. Border, proved how comparatively easy and rewarding it is to set up an aquarium for native marine sea-shore life and elaborated on this by showing slides of the numerous animals to be found on the shore. Being a professional entomologist he discussed with Club members the most likely insect pests to be found in the fish house and the possible ways of eliminating them. He also exhibited a large selection of reptiles and amphibians. Meetings are held every first and third Thursday evening of the month at the Oddfellows Hall, Lower Bridge Street, Chester. Hon. Secretary: Mrs. A. Dutton, The Limes Farm, Tarvin, Chester.

**THE members of the Bishops Cleeve A.S.** heard an excellent talk with slides by Mr. J. Kerr Davis on Life on the Sea Shore at their August meeting, which was most informative and interesting. The Table Show was for Loaches and the result was: 1, C. R. Suggs; 2, T. Evans; 3, I. Scriver; 4, D. Stevens.

The Society has received a letter from Prof. Dr. Gunther Stebbins consenting to be Patron to the Society.

**THE East London Aquarist & Pondkeepers Association** annual show proved to be very successful. The show in the main was for Tropical Breeding achievements. Fish breed since

26th June, 1968, four classes, also A.V. Platy Pairs (F.R.A.S. Trophy) and A.O.V. Live-bearing Pairs. There were 29 Furnished Aquaria which added a great deal of colour and interest to the Show.

The Open Club Furnished Aquaria 24 in. x 15 in. x 12 in. for the I.G.M. Trophy was won by the East London Aquarist Club. The individual Furnished Aquaria 24 in. x 15 in. x 12 in. by G. Green. The class 12 in. x 8 in. x 8 in. was won by L. R. Baker, while the Crede Cup award for the best plant of the show went to Mrs. P. Harris along with the Breeding Achievement Trophy for her entry of Epiplatys Anulatus. The Manor Cup was won by Mrs. S. Armitage for her fish in the show with her entry of Platylabus which also won her the F.R.A.S. Shield. The Five Star Cup was won by J. Ross. Class results were:

A.V. Tooth Carps: 1 and 3, Mrs. S. Armitage; 2, Mrs. P. Harris; 4, G. Green. A.V. Barb and Labryrinthia: 1, P. Cameron; 2, F. Vicker; 3, W. Corby; 4, J. Ross. A.O.V. Egg-layers: 1, G. Green; 2, P. Compton; 3, F. Vicker; 4, R. G. Cox. A.V. Livebearers: 1 and 3, E. G. Cox; 2, G. Green; 4, J. Ross. A.V. Platy Pairs: 1, G. Green; 2, L. Baker; 3 and 4, Mrs. J. Arrow. A.O.V. Livebearer Pairs: 1, G. Green; 2 and 4, W. Corby; 3, K. Frost. Large Home Propagated Plants: 1 and 3, Mrs. P. Harris; 2, P. Compton; 4, Mrs. J. Arrow. Other Home Propagated Plants (3 plants or cuttings): 1 and 2, G. Green; 3 and 4, Mrs. S. Armitage.

**THE next meeting of the Scottish A.S.** will be held in Balaclava Sports Centre on 7th October. The speaker will be Gen. Moulde, and the Table Show is for Large Cichlids, Breeding Couples, Fishes and A.O.V. Labryrinth. The Open Show is to be held at McLellan Galleries, Southchapel Street, Glasgow, on 23rd, 24th and 25th October.

**IN August the Overseas A.S.** held their Annual Open Table Show. The judges were Messrs. L. Baxter, P. Moorhouse, A. Laidley and J. T. Sutton, all of the F.N.A.S. The Best Fish in Show award and "Aquarist" Gold Pla were won by N. E. Gibson of Huddersfield. The Society Achievement Trophy was won for the third time by F. Gregory, while J. E. Shaw won the Home Furnished Aquaria award for the second time. The Junior Home Furnished Aquaria award was won by M. R. W. Wakefield. The presentation of prizes was made by Council member H. Hall who commended the Overseas Society on staging such a good show and the exhibitors on the quality of their entries. There was an entry of 417 and the awards were as follow—

Anabantids: 1, Mrs. M. Cobb (Belle Vue); 2, K. Parker (Merseyside); 3, A. Hudson (Wakefield); Fishes: 1, J. A. Whitley (Aireborough); 2, J. E. Lord (Valley); 3, N. Spencer (Halifax). Small Barbs: 1, F. Gregory (Oswam); 2, J. Wright (Aireborough); 3, J. A. Whitley (Aireborough). Large Barbs: 1, C. C. Nelson (Aireborough); 2, J. A. Whitley (Aireborough); 3, D. Kennedy (Bradford). Ladies and Shanties: 1 and 2, F. Mulla (Merseyside); 3, D. and K. Stander (Loyne). Small Characins: 1 and 3, J. Wright (Aireborough); 2, Miss E. Kaye (Huddersfield). Large Characins: 1, J. & B. Robinson (Privates); 2, J. Greay (Sunnybrow); 3, N. Turner (Mansfield). Dwarf Cichlids: 1, N. E. Gibson (Huddersfield); 2, J. Brock (Wakefield); 3, A. Hudson (Wakefield). A.O.V. Cichlids: 1, F. Booth (Wakefield); 2, D. & K. Stander (Loyne); 3, K. Parker (Merseyside). Anguilla and 2, A. Nicke (Leigh); 3, J. V. Hill (Aireborough). Tooth Carps: 1, J. Greay (Sunnybrow); 2, R. Cox (Oswam); 3, W. J. Oram (Salford). Rainbow: 1, F. Gregory (Oswam); 2, A. Beasley (Oswam); 3, Mr. & Mrs. Webb (Salford). Danios: 1 and 2, M. Alder (Aireborough); 3, F. Mulla (Merseyside). Guppies: 1, 2 and 3, P. J. Duffy (Aireborough). Swordtails: 1, J. Greay (Sunnybrow); 2, J. & B. Robinson (Privates); 3, H. Whitcomb (Aireborough). Molias: 1, S. Harrop (Oswam); 2, J. Murray (Salford); 3, Mr. & Mrs. S. A. Kemp (Belle Vue). Platys: 1, Mrs. P. Walker (Aireborough); 2, J. Greay (Sunnybrow); 3, J. A. Whitley (Aireborough). A.O.V. Livebearers: 1, J. &

R. Robinson (Privates); 2, Mr. & Mrs. Webb (Salford); 3, G. Hodgkinson (Gorton). Loaches: 1, D. & R. Stander (Loyne); 2, Mr. & Mrs. Webb (Salford); 3, G. Hodgkinson (Gorton). Catfish: 1, F. Mulla (Merseyside); 2, J. E. Shore (Oswam); 3, E. Thompson (Gorton). Goldfish: 1 and 2, E. W. Eaden (Sheffield); 3, M. P. Cobb (Belle Vue). Shubunkins: 1, 2 and 3, W. Pennell (Oswam). Veiltails and Fantails: 1 and 3, S. Walsh (Aireborough); 2, W. Smith (Aireborough). Orandas and Lionheads: 1 and 2, C. Whitley (Aireborough); 3, E. W. Eaden (Sheffield). A.O.V. Coldwater: 1 and 3, E. W. Eaden (Sheffield); 2, C. Wallbank (Aireborough). Breeders (Egg-layers): 1, Mr. & Mrs. R. Huey (Sunnybrow); 2, F. Gregory (Oswam); 3, J. A. Whitley (Aireborough). Breeders (Guppies): 1, 2 and 3, P. J. Duffy (Aireborough). Breeders (Livebearers): 1, W. G. Horton (Salford); 2, G. Hodgkinson (Gorton); 3, Mr. & Mrs. Webb (Salford). A.O.V. Tropical: 1, D. Kennedy (Bradford); 2, J. R. Lord (Valley); 3, J. E. Shore (Oswam). Pair (Egg-layers): 1, J. & K. Barlow (Aireborough); 2, Mrs. M. Cobb (Belle Vue); 3, D. & R. Stander (Loyne). Pairs (Livebearers): 1, P. J. Duffy (Aireborough); 2, N. R. Gibson (Huddersfield); 3, J. & R. Robinson (Privates). Oswam Juniors: 1, R. Wakefield; 2, B. Lord; 3, D. Butterworth.

**THE Wellingborough & District A.S.** were recently entertained by Mr. Morris from Chatteris, who gave an illustrated talk on the Diseases of Fish. It is hoped to obtain the services of Mr. Randall from Bedford for a talk at the October meeting. At this meeting the Table Show will be for Cichlids.

**THE Bradford & District A.S.** Newsletter assesses a number of points illustrating the bargain a member gets from his Society subscription over the year, the value of which is also overlooked by many other Society members. A programme of film shows has been arranged commencing with the mass meeting in October. Recently, the members enjoyed a Sunday outing to Pickering Trout Hatchery.

#### SECRETARY CHANGES

Dulverton A.S.: E. L. Frost, 102 Anston Avenue, Woking, Surrey.  
Glasgow A.S.: Miss D. Smith, 3 Chapel Lane, Midfield, via Hyde, Cheshire, SK14 7PG.  
Gosport & District A.S.: Mrs. D. J. Langford, 5 Caroline Place, Cobden Street, Gosport, Hants, PO12 4QJ.  
Dunstable & District A.S.: C. M. Ward, 28 Wilberforce Road, Clay Lane, Dunstable, Yorks.

#### AQUARIST CALENDAR

19th, 19th October: British Aquarists' Festival, Belle Vue, Manchester.  
22nd-23rd October: Scottish A.S. Open Show to be held at McLellan Galleries, Southchapel Street, Glasgow.  
26th October: Halifax Aquarist Eighth Open Table Show. Location: at South Palmer & Co. Ltd. Huddersfield Mills, Halifax. Schedules from A. G. Wynn, 11, Rutland Drive, Halifax.  
2nd November: Middlesbrough T.F.S. Open Show at the Middlesbrough Community Centre, Clough Lane, Middlesbrough, or Halifax. Show schedules available from J. H. Brown, 9 Clough Bank, Middlesbrough, Yorks.  
8-9th November: Heywood Horticultural Society Heywood and District A.S. Joint Two Day event. Open Show, Sunday, 9th November, 1968.  
9th November: New Colchester and District A.S. Open Show at St. Paul's Hall, Colne Bank Avenue, Colchester. Schedules from H. Morris, 120 Collingwood Road, Colchester, Essex.  
9th November: Hartlepool A.S. Eleventh Annual Open Show. Langdon Hall, Seaton Carrs. Schedules available from J. D. Watson, 42 Sydenham Road, Hartlepool, Co. Durham.  
9th November: Atherstone A.S. Open Show. Details may be obtained from Hon. Secretary, A. Trotman, 15 Meadow Street, Atherstone, Warks.

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