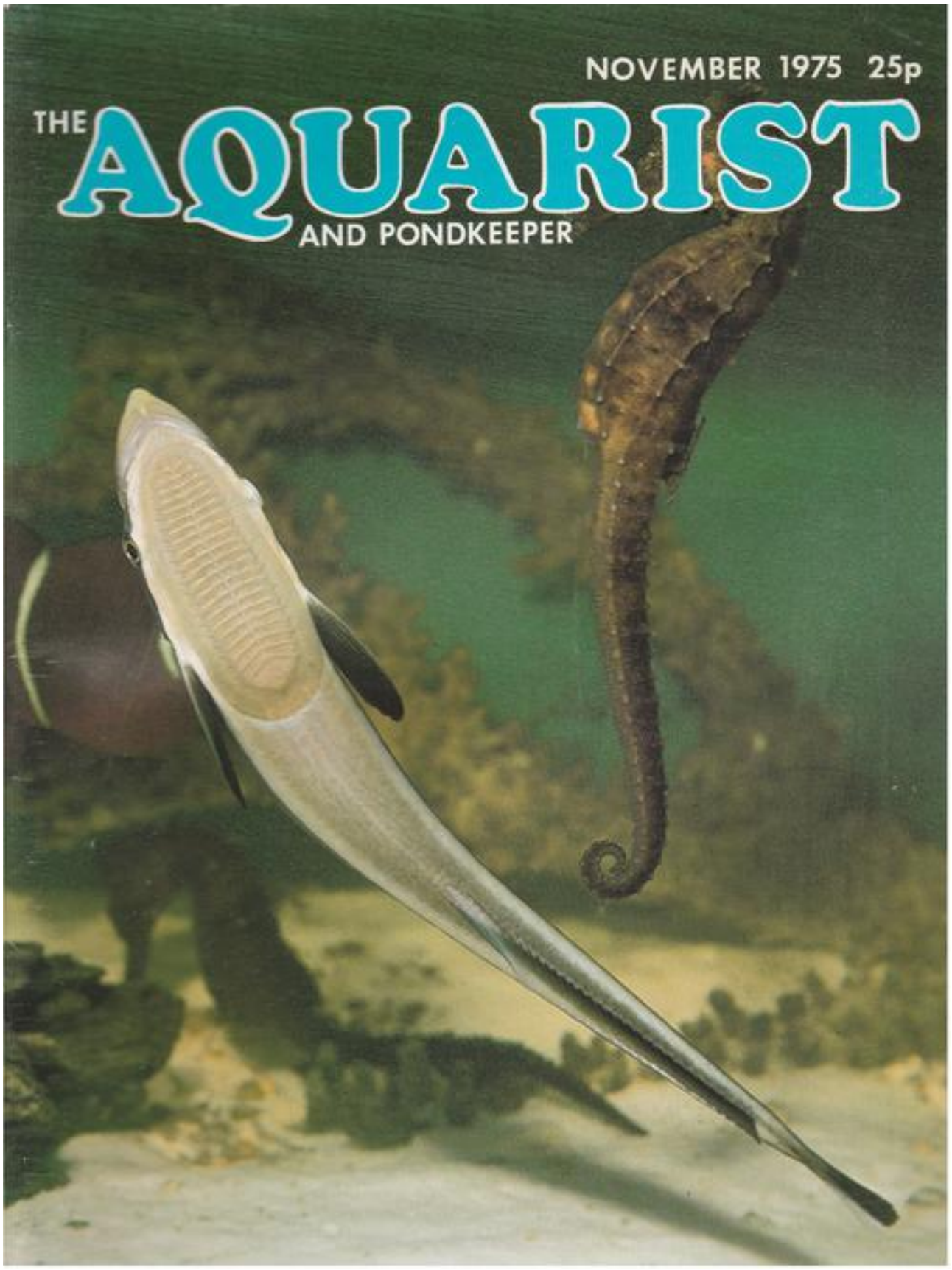
NOVEMBER 1975 25p

THE AQUARIST AND PONDKEEPER



THE AQUARIST AND PONDKEEPER

The Aquatic Magazine with the Largest Circulation in Great Britain

Published Monthly 25p

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ABC
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Our Cover:
A Ramora (*Echeneis naucrates*) or Slender Sucker-fish.

Telmatochromis caninus

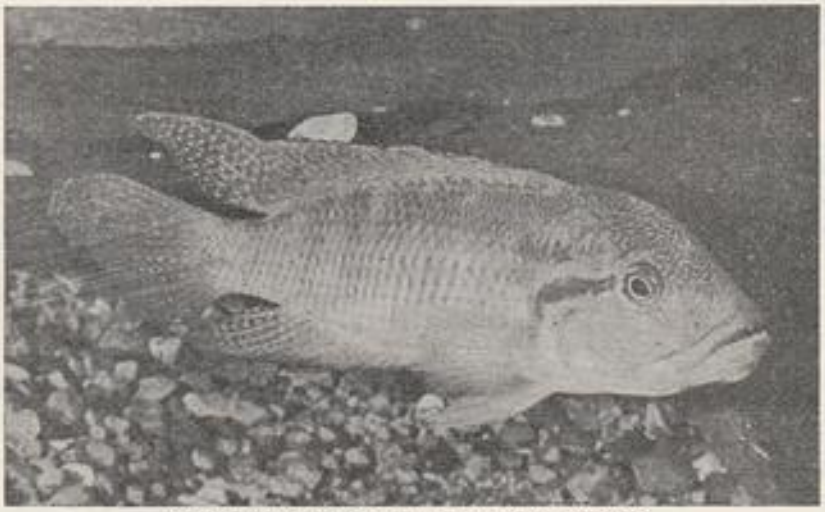
A CAVE-SPAWNER FROM LAKE TANGANYIKA

Written and Illustrated by Jorgen & Pamela Hansen

A CONSTANT stream of newly discovered cichlids from lake Tanganyika invades the European market. Some are mouthbrooders and some cave spawners. In lakes Tanganyika and Malawi a parallel development has taken place, such that certain genera in the one lake correspond both morphologically and ecologically to genera in the other lake. In this way the *Pseudotropheus* genus from Lake Malawi corresponds to the *Tropheus* genus in Lake Tanganyika and *Melanochromis* corresponds to *Telmatochromis* in Lake Tanganyika.

A group of cave-spawning, non-mouthbrooding cichlids, comprised of the three genera, *Julidochromis*, *Lamprologus* and *Telmatochromis*, the latter being the most primitive, is found in rocky coast areas in Lake Tanganyika; this group is perhaps derived from an early *Haplochromis*. There are six species of Telmatochromis:

1) *T. bifrenatus*
2) *T. burgeoni*
3) *T. caninus*
4) *T. lestradei*



T. caninus (male) note the fine pattern on the head.

5) *T. temporalis*
6) *T. vittatus*

T. caninus is endemic to Lake Tanganyika. The male is larger than the female, the largest caught specimen having been measured at 12 cm. The body form is narrow and elongate, and the basic colouring greyish-brown; six darker, indistinct bands run across the body. The scales divide the body into rows of gleaming dots. The dorsal and ventral fins reach as far back as the caudal fin and are studded with small round white spots. The dorsal fin is edged with a narrow band of black, under which is a correspondingly narrow orange band. The anal fin is edged only with black. The ventral fins are dark with the anterior fin rays slightly larger than the others; the pectoral fins are transparent. The upper part of the head is finely marbled with a dark brown pattern. A sharp reddish brown line runs backwards from the eye to meet the gill slot dorsally, and then runs down to end at the base of the pectoral fins. Max Poll states the following fin ray and scale counts:

Dorsal	: XVIII-XX	8-9
Anal	: VI	7-8
lateral line	: 23-30	Sometimes interropted by
	8-19	Spots

The mouth is broad; the lower jaw reaches slightly further forward than the upper jaw. The outer teeth are conical, those at the front of the mouth being the strongest. In the outer row of the upper jaw there are from 40-48 teeth. The inner rows of teeth diminish in size inwards.

The tank in which we first set our pair of *Tehmatochromis caninus* was almost completely bare. We improved it by introducing various bits of slate placed on top of each other to form a row of passageways and low caves. The fish immediately took over this area and there removed all the gravel they thought to be superfluous.

We fed both with dried and living food, all of which was eagerly accepted. After 10 days we noticed that the female kept constantly under the slate, and fanned wildly with the pectoral fins. When the male approached, he was chased away.

We then discovered about 50 white eggs about 2 mm. in diameter on the underside of the slate. There was so little space in the cave that the male could only have entered by swimming sideways. Two days later the eggs had disappeared.

Seven days after the spawning we moved the fish to a 40 litre's tank built up similarly with slate. One of the caves was built especially so that it would be possible to photograph the spawning if it took place therein, so of course the fish were not the slightest bit interested in it. The male immediately after being moved behaved very aggressively towards the female. He even attacked a net inserted in the tank and wrestled with it with his large strong teeth.

28.5.75. Exactly 16 days after the previous spawning the fish had again spawned, and the eggs were again attached to the roof of a cave. The female looked after the eggs and kept the male at a distance. Two days later, 30.5.75, the eggs hatched, and the small extended tails wriggled back and forth. The fry hung clumped together on the roof and sides of the cave.

6.6.75. Nine days after the spawning the eyes had developed whereas the body (egg) was still white. The parents didn't seem very interested.

Male fish on left showing pattern on head and large conical teeth.

8.6.75. The fry left the cave but kept in its immediate vicinity near the bottom, still under the slate. They were about 8 mm. in length and spotted with black. It was almost impossible to perceive them against a dark background. They swam with short jerking movements; we began to feed with micro-worms.

15.6.75. The fry had grown to a length of 10 mm. but still kept to the bottom. The mother now took good care of the fry.

17.6.75. Eggs were spawned in the same place as before. The female spent half her time fanning the eggs, half her time taking care of the fry from the previous brood. They swam near the cave without being attacked by the parents.

1.7.75. Another spawning occurred in the usual spot. Now the tank contains two broods of baby fish and one lot of eggs. A family with young in all possible sizes is not an uncommon sight when you keep *T. caninus* in a specially furnished tank.

THE NOT-SO-FAIR DAMSELS

by Martyn Haywood

DAMSEL FISHES are probably the commonest fishes on the reefs of the world and are to be found in all the tropical seas. Various well-known authors put the number of known species of *Pomacentridae* (damsels) at about 200 but it is likely this number will swell as more and more reefs are explored for the family is widespread.

By virtue of their numbers damel fishes are among the most collected of fishes and therefore usually the cheapest of marine fishes to be bought in this country.

Damsel fishes are often recommended to the beginner as suitable first fishes, whether as starter fishes to mature a tank intended to hold more difficult species at a later date, or as fishes suitable for the community tank.

When I began having thoughts about keeping marine fishes I read as many books, by as many different authors, as I could lay my hands on. The vast majority of these recommended starting with damsel fishes of the genus *Dascyllus*.

They were described as being hardy, easy to feed, accommodating to the mistakes a beginner was likely to make and cheap. As soon as you start looking for stock you realise that cheapness is relative, particularly if you have been used to buying freshwater species at so many per pound sterling.

However, they are indeed relatively cheap and I am convinced it is this rather than any other qualities which appeals to people making their first ventures into marine keeping. Were they aware of what they might be letting themselves in for I am sure they would think twice before buying damsel fishes, particularly *Dascyllus* species.

Until the time when marine fishes are commercially bred on the lines of most freshwater fishes, and the prices of the more desirable species float down to a more acceptable level—£5 to £15 for the better species being enough to take the wind out of most people's sails—then damsel fishes will undoubtedly continue to sell well.

Unfortunately, in many books damsel fishes are cast in the same mould—as hardy, aggressive, colourful and cheap. In my experience some of these characteristics are either heightened or missing in some species. Here I discuss the suitability of some of the commoner varieties of damsel fishes for the home aquarium, basing comments on personal experience.

Humbug Damsel (*Dascyllus aruanus*) and *Dascyllus melanurus*. These two species can be discussed in the same breath for the only practical difference between the two which I have found which is of interest to the average aquarist is in the fishes' body colours. *D. aruanus* has a white tail while *D. melanurus* has a black caudal fin. Both fishes have a body pattern of three quite wide black bands, the second of which extends to encompass the pelvic fins.

At the moment I have a specimen of *D. melanurus* and it is one of the most active and eye-catching members of the community and these qualities make it a fairly desirable fish in its smaller sizes—up to about one and a half inches.

Like the other damsels discussed so far, this species is very hardy. Soon after purchase my specimen developed three pin-head-sized patches of something looking like white blisters. Not knowing for certain what this was and therefore not knowing the cure, I decided to leave well enough alone and let nature take its course. Three months later the one and a quarter inches fish is as active as ever, the spots have healed leaving only small areas of scar tissue and all seems to be well.

This fish has proved particularly partial to Tetramin flake foods, preferring them to everything except chopped mussel and shrimp. However, they will eat the usual range of foods fed to marine fishes.

I have found this fish to be aggressive to newcomers in the tank but even new fishes smaller than the Humbug Damsel will survive if the new addition persists in its efforts to stake out a claim. In conclusion this is a good fish with other damsels, wrasses and Angel fishes but should not be kept with shy species such as the various butterflies.

Cloudy Damsel (*Dascyllus reticulatus*). Steer clear of this brute at all costs unless one is prepared to give it a tank to itself such as would be necessary if trying to breed the species.

The fish grows to about five inches long but is usually sold at sizes between three-quarters and one-and-a-half inches. Seen in the correct light this fish has some of the subtle beauty seen in many freshwater fishes.

The main body colour is an off-white with a slightly darker fore-half separated from the lighter rear area by a whiter stripe from mid-dorsal to the belly. The dark areas fade when the fish is frightened. The dorsal and pelvic fins are dark. There is a violet tinge over the entire body but this is by no means outstanding or particularly brilliant.

This species comes from the tropical Indo-Pacific and it or a similar species is imported from the Red Sea. This latter is often sold as the Red Sea Damsel. For my money both varieties are welcome to stay in their natural habitats.

My fish would eat anything, including flake foods, freeze-dried brine shrimp and *tubifex*, mussel, shrimp, shrimp tablets, cod roe and white worm. It thrived at temperatures from 72°F to 82°F and was used to mature two tanks without suffering any disease.

In addition to not being particularly colourful this is also a violent species, fighting with all its many and varied tank-mates except for a cleaner wrasse. It fought with damsel fishes, angels and butterflies, all larger than itself and won. It would tolerate no other specimens, once demanding the whole of a 30-gallon tank as its own inviolable territory. Give this species a miss.

Domino Damsel (*Dascyllus trimaculatus*). Young specimens of this species, particularly those under an inch long, are one of the most desirable of the many damsel fishes. Unfortunately, the desirability of the fish gradually disappears as the fish grows towards its maximum size of about six inches—the bigger the fish the more aggressive it is.

The young fish has a velvety black body with a large white blotch on each side and a smaller one on the back, just behind the eyes. This colour pattern accounts for the fish's other common name—the Three-Spot Damsel.

When small, schools of this species numbering seven or more can be kept together but as they get bigger they become less tolerant of their fellows. They will tend to congregate around a coral head into which they will dart when frightened—making an ever-shifting pattern of black on white or green and brown depending on whether the aquarist prefers the sterile or more natural systems of marine keeping.

As this fish gets larger so the white marks atrophy until there is no sign of there ever having been any spots. At this size they are very aggressive but like the Cloudy Damsel may be worth considering as a fish which might be prompted to lay eggs in the home aquaria.

The fish is widespread from the Red Sea to East Africa and Polynesia. A similar species, *D. albisella*, replaces *D. trimaculatus* in Hawaii and is likely to be, like the Domino Damsel, a good fish when small but one to be avoided in its larger sizes.

Like the Cloudy Damsel, it will eat almost anything that could be imagined as suitable food.

Yellowtail Damsel (*Pomacentrus melanochir*). There are several fishes in the family Pomacentridae which have a vivid blue body, a bright yellow tail and varying amounts of yellow in the paired fins. Most of these which I have seen and all of those I have kept are the species described in Axelrod and Vorderwinkler's "Salt-water Aquarium Fish," as *P. melanochir*.

Judging from the illustration in the above-named book the fish was photographed under incandescent lighting. There is no doubt this species has to be seen under fluorescent lighting, and not Gro-lux or bulbs, to be viewed to its best advantage. It is only then the gorgeous royal blue of the body is shown to perfection. Eight or nine specimens in one tank is a sight to behold.

My first venture into marine-keeping involved a one-and-a-quarter inches long Yellowtail Damsel and it lived for six months in perfect health before being bullied to death by a Dusky Damsel.

The Yellowtail Damsel is one of the slender-bodied damsel fishes—as opposed to the nearer circular-bodied *Dascyllus* species—and I have found fishes with this body shape to be the less aggressive of the group. The only fishes I have ever found them to be intolerant of are other damsels with slim bodies. Other fishes, including butterflies and invertebrates, such as

crabs and coral, have gone untouched.

This fish will tolerate temperatures in the normal range, eats almost everything imaginable which contains some flesh or flesh derivative, withstands nitrites and diseases well and is beautifully coloured.

In addition it has the interesting, if sometimes aggravating habit, of digging holes in the tank gravel to form hiding places. If the sand is fine enough it will "blow" the sand away by vigorously beating its tail. If not then it takes individual grains of gravel in its mouth and deposits these up to two feet away from the hole. This can be a nuisance when the fish is in a tank with an under-gravel filter as it will occasionally dig down to the filter plate. In this case the holes have to be filled or the efficiency of the filter will decline—water taking the line of least resistance.

All in all this is a good fish for anyone just starting in the marine branch of the hobby and one which is a worthwhile addition to the community tank.

Blue-Stripe Damsel. So far I have been unable to discover the correct scientific name for this species or indeed, find a similar one described in my admittedly small collection of books on the subject. However, the common name is, for once, fairly accurate and the species is very distinctive.

The main body colour is a pale yellow under fluorescent lighting or bright lemon yellow under incandescent bulbs. On either side a bright blue stripe runs, above the lateral line, along each side to terminate in a blue-black ocellatus in the final few rays of the fishs' dorsal fin. The other fins are all yellow. The blue stripe runs through the eye to join above the mouth thus forming an elongated "V" when viewed from above.

My specimen has so far proved very hardy, like the other fishes so far described, is very active, a hearty eater and a decorative addition to the tank.

Unfortunately though, I feel it may become rather aggressive as it grows. At the moment it is only one-and-a-quarter inches long. It is the most recent addition to my community tank but is has overcome the aggressive intentions of a Humbug Damsel and a Yellow-tail Damsel, both of which are larger than itself and well established, and now tends to get the better of infrequent scraps with the Humbug.

If this fish does not become more aggressive I would recommend it as its beauty is, in my view, unsurpassed among the damsel fishes and it has not bothered any other species apart from the damsels, including a *Chaetodon collaris*. Incidentally, this is the only fish I have kept which has persistently rejected the advances of the Cleaner Wrasse, *Labroides dimidiatus*.

Green Chromis, Blue Chromis (*Chromis caeruleus, Chromis cyanea*). The Green Chromis and the Blue Chromis are both commonly available in the shops and a rather duller species—tagged the Yellow Chromis—is also sometimes seen. Both *C. caeruleus* and *C. cyanea* are very attractive and the green species particularly warrants a place in the aquarium as this colour is unusual in marine fishes. Their body colour varies from sea-green to a bright grass-green depending on the lighting and the well-being of the fish. Whatever the specimen's colour it is always beautiful.

The Blue Chromis is as blue as *C. caeruleus* is green and in addition it has an attractive, deeply-forked tail which is edged with blue-black, as is the dorsal fin.

The Green Chromis is found in the Red Sea and tropical Indo-Pacific waters while the Blue Chromis occupies a similar ecological niche in the Caribbean Sea and Florida, living on the outer fringes of the reef.

These two species require more vigorous aeration than the other damsel fishes and will hang near the filter outlets if there is not a good deal of water movement throughout the tank. They seem to get on better in small shoals, six or seven being about right to avoid too much fighting. A single specimen will, in my experience, often go into decline and die.

Neither species is as hardy as the other damsel fishes mentioned and the Blue Chromis tends to lose the fin extensions if housed with other damsel fishes. On the plus side both species have proved very mild mannered in their smaller sizes—one-and-a-half to two inches. I have not kept any which were longer than this. Live foods, particularly young brine shrimp and white worm, are appreciated as is chopped shrimp and mussel. Mine have been rather reticent about taking flake foods in early weeks but eventually came around to accepting it almost as avidly as other damsels.

Coral heads are a necessity in tanks housing these fishes as they are easily panicked and must have places to hide in and feel secure if they are to settle down.

Sergeant-Majors (*Abudefduf* species). The various *Abudefduf* species are known to American aquarists as Devils and they fully deserve this title for they are, almost without exception, the most vicious of all Pomacentrids.

They will tear fishes smaller than themselves to pieces in short order and will often harass fishes much bigger than themselves particularly if these are of the more mild-mannered varieties.

Most species will grow quite rapidly and are very hardy. One American author cites a case of an *A. saxatilis* being kept alive for some months in nothing more than a solution of table salt which had been used for hatching brine-shrimp eggs.

Although some species are attractive in their smaller sizes most species tend to become quite dull, compared with most marine fishes, as they mature. The only notable exception is *A. saphirus*, the Saphire Devil, which is a radiant blue. The other species are well worth leaving in the dealers' tanks.

SOMETHING ABOUT
WATER

by Jack Hems

WATER IS, for the serious aquarium keeper, something to think about. Moreover it is very often something to worry about. For if it is markedly hard, that is overcharged with dissolved or semi-dissolved mineral salts, then there is no question that it will have an adverse effect on the lives or breeding habits or both of a plenitude of freshwater fishes: tetras, for instance, some South American cichlids, and a goodly number of cyprinids: rasboras in particular.

Admittedly, some of the oviparous killies and livebearers such as guppies, limias, platies and mollies (though the last prefer their water slightly salt) are quite adaptable so far as their environment is concerned, yet even these easy species lose a lot of their vim and sparkle if they are introduced into water that is more than medium hard.

The introduction of certain types of stonework into a tank housing fishes not demanding a special environment as, for example, cichlids of the Rift Valley lakes, is the shortest cut to water fraught with peril. Lumps of concrete, artifacts moulded out of a mixture of cement and sand (unless specially treated after setting), slabs of marble, alabaster, pieces of coral and other objects derived from the natural history of the sea floor should be avoided like the plague. This on account of their lime-ridden content. It is equally true to say that some pebbly pieces spread over the bottom of a fish tank are quite unsuited to their surroundings. For clearly the pulverized exoskeletons of various crustaceans and molluscs, the nicely rounded chippings of limestone and chalk, have a hardening and alkalifying effect on water, and worse, in a small body of it, almost always result in a rampageous growth of algae which smothers higher plants and fish too if it gets twisted round their gills and fins.

There is no question that a silica (calcium-free) grit or sharp white sand is the best compost to use to maintain aquarium water in good condition. Granite chippings are lime-free but before they can be made suitable for carpeting an aquarium they must be stirred until the arms ache under a running tap to free them of adherent dust and loose dirt. Furthermore, as granite chippings are exceedingly open in texture they do provide excellent lodging places for uneaten fish food, and as the newcomer to fishkeeping almost always feeds his aquarium inmates too generously (to begin with) then all the uneaten food stays out of sight and contaminates the water by generating noxious gases.

In most parts of the country mains water tends to be hard rather than soft. Yet water only slightly hard is nothing to worry about. Bicarbonates of calcium and magnesium, which account for some of the hardness, may be removed by boiling. It must be stated right away though that "boiling out" water does nothing more than rid it of the above salts (these are categorized under the heading of temporary hardness). There are other salts, however, which cannot be precipitated (the egg-shell-like encrustation on kettles used in a hardwater area is a clear demonstration of this process) by boiling. They give water what is known as its permanent hardness.

These non-carbonate salts (essentially sulphates of magnesium and calcium) are best dealt with by ion-exchange resins (any knowledgeable, and I repeat knowledgeable, dealer in tropical aquarium fishes will give you information about such resins) or by diluting an unsatisfactory tapwater with distilled water or rain water. Apparatus and charts for determining the degree of hardness of water (German DH or English ppm = parts per million) may be purchased in any well-stocked aquarium shop.

Rain water is free. Distilled water isn't. As a matter of fact it is far from cheap to buy at a chemist's shop. Nevertheless, it must be stated at once that not all collected rain water is desirable in the aquarium. For one thing, rain water to be suitable for fishes must have had no contact with toxic or alkalifying substances such as freshly painted surfaces, soot-grimed asbestone sheets, galvanized iron, dirty gutters and downpipes or an expanse of concrete unless this is non-crumbly and well-weathered into the bargain. And one more word of advice. Never use rain water which has drained off a tar-felted shed.

A plastic bowl or a long-established wooden or glass-fibre butt free of wind-deposited debris and the droppings of birds is the sort of vessel to use. An important point to bear in mind, also, is that rain water is more suited to an aquarium if it is collected in a non-industrial rather than an industrialized area; for as rain falls it absorbs and carries down pollutants floating in the atmosphere. Be this as it may, rain water descending over a town is more likely to suit the general run of fishes than water straight from the tap if—mark you—the vessel used for its collection is not

Continued on page 437

WHAT IS YOUR OPINION?

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

Photographs by the Author

REGULAR READERS of this feature will know that its columns are open to anyone who wishes to "let off steam" by expressing his or her opinions on any facets of the aquatic hobby. Two of the letters in *Our Readers Write* (September 1975 issue) were controversial enough to make me want to let off a little of my own steam. I trust our Editor will allow me to do so. The controversial letters were from Mr. Lawrence Sandfield, Press Officer, E.D.A.S. (F.B.A.S.), who made some comments under the heading "True-lite"; and from Mr. J. B. Adams, Director of the Ark-Aquatic Centre Ltd., who provided a reply and took the opportunity to criticise aquarists who complain about high prices, aquarium products manufactured in Britain, and the ". . . many British pet and aquatic shops . . . shamefully run, with filthy aquariums stocked with dying fish, staffed by incompetents and patronised by hobbyists who deserve no better . . ."

Firstly, I am unable to comment on the advantages of True-lite tubes over other forms of lighting used by aquarists—nor am I likely to be able to do so in the future as I would not be prepared to pay the high prices being asked for these tubes. Mr. Sandfield states that he was quoted £4·50 for a 24in. True-lite tube; Mr. Adams, who retails the tubes and wrote an article about them in the May 1975 issue, quotes £5·25 as the suggested retail price; and a reader of this feature, Mr. J. R. Wheeler, of Wembury, Newport Street, Clun, Craven Arms, Salop, writes in a letter to me: ". . . a 24in. True-lite tube—£5·45. When I remonstrated with the dealer he claimed the price was £6·00! . . ." No doubt True-lite may have advantages for difficult marines and reptiles, but personally I can think of few valid reasons for those of us who keep freshwater tropical, or cold water, aquaria to invest in expensive fluorescent tubes—even if they are cheaper to run than ordinary tungsten bulbs and last for years. For 14p I can purchase an ordinary tungsten light bulb—and under its light, when placed over an aquarium, I can grow and breed healthy freshwater fishes and cultivate and reproduce excellent aquarium plants. Over a good many years I have tried a variety of fluorescent tubes, with and without the addition of tungsten bulb lighting. True-lite is amongst the varieties I have not tried. Of the brands and varieties of fluorescent tubes I have used I know of none that has given me as good results, with both freshwater plants and fishes, as ordinary tungsten bulbs. I'll stick with them, and replace them when necessary until someone convinces me that other artificial light sources will give me better results.

I would like to take issue with Mr. Adams on his comment that: ". . . the best equipment available to the British aquarist is either imported or made under licence . . ." It is matched only by Mr. Sandfield's comment that: ". . . British manufacturers neglect the aquarium scene shamefully. . . ." To both gentlemen I would say—Nonsense! Certainly there are many good foreign products on the British market—but there are also many excellent British products available to British aquarists. What about the excellent Gussie pumps produced by Armitage Brothers Ltd., a firm that has been in the business for 200 years? What about the Springfield Mariner C200 automatic aquarium heaters? I've yet to find better ones from any source! Do you know of a better outside filter than Interpet's Airstream Super Twin; or better fry foods than the two varieties of Liquifry formulated by Dr. Neville Carrington of Interpet? Have you tried Phillips excellent Superfood? What about the new range of Aquarian remedies and the superb new Aquarian fish foods? I have had the pleasure of using these new foods for the past few weeks and consider them to be the finest flake foods I have ever used —and I've used and reviewed a good many during the 25 plus years I've been keeping fishes in aquaria! The fact that Aquarian foods are cheaper than a popular foreign brand is an added attraction. Are there any better U/G filters than those manufactured by Algarde?

My list is a random one, consisting of the first items that entered my mind; it is also a limited one because I feel it illustrates my point that there are plenty of top quality goods made in Britain for use by the aquarist. No doubt others could add to the list. I would be the first to admit that there are many excellent foreign products available in the U.K. Some of them are better than their British equivalents; others are singularly good in that there are no British equivalents; but then the British market is limited: the U.K.'s aquarist population is large, but not massive—as opposed to the numbers of aquarists who live in the U.S.A. and on the Continent. The fact that a lot of

aquarium goods manufactured in Britain are exported to foreign countries speaks for itself.

Mr. Sandfield states that he wants British goods at reasonable prices. Surely this is a resonable request in the light of Britain's present economic position; few of us can afford to spend a lot of money on hobbies at present—whether such hobbies be aquarium keeping, hi-fi, golf or model aircraft making! I doubt if anyone would complain if all hobbies became cheaper. If, as Mr. Adams says, British aquarists are reluctant to spend money, why are there so many imported goods on the market? I would assume that if British dealers import expensive goods then such goods must sell in Britain—at high prices. Would not British made goods, of similar price and quality, sell at least as well? I feel that they would. However, we aquarists can't buy such British goods if British manufacturers don't make them. Is it not a sort of chicken and egg situation? Dickens's character Ralph Nickleby made money because he was prepared to speculate; yet his brother Nicholas Nickleby lost most of his money because he tried to speculate. If I can obtain a good British product at a reasonable price I'll buy it in preference to a similar foreign item; but if I can obtain a good foreign product at a lower price than its British counterpart I'll buy it. Recently released figures of foreign cars sold in Britain confirm my latter point.

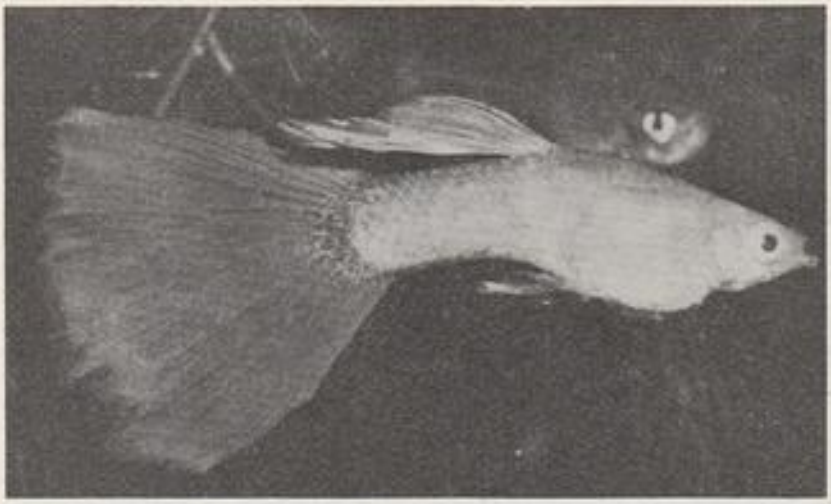
Are there really as many bad British aquarium shops and dealers about as Mr. Adams would have us believe? I'm pleased to say I know of none in Northern Ireland; nor have I been disappointed in any of the limited number of aquarium shops I have visited during holidays in London. Perhaps I've visited only the "right" shops and missed the bad ones; but I'll admit my experiences are limited. There are good and bad in all spheres of life and I've no doubt that the average aquarist, like hobbyists in other fields, is discerning enough to know the difference. The good dealer who provides good stock, service and equipment, and the manufacturer who produces good quality products, will gain the support they deserve if their prices are reasonable by modern standards; the exorbitant and the bad will surely flounder—unless they have a monopoly in a given area.

So, gentlemen, before you continue with your "bashing" of either the British hobbyist, retailer or manufacturer, please remember that no single set could survive without the other two. Let's all join forces for the betterment of the hobby during this period of financial difficulty in the U.K.; the battle can be resumed in a couple of years when we're all rolling in liquid gold! I'd be pleased to receive readers' comments and opinions on any of the points made by Mr. Sandfield, Mr. Adams, or myself. I'll be pleased to publish letters containing fair comments and criticisms—but I don't intend to provide a field in which a verbal battle will be fought.

Four-leaved water clover.

Having aired my views I'll hurry on to the second of the letters sent for this month's feature. It comes from Mr. C. Atkinson, an S.D.A.S. official who lives at 7 Mill Balk Place, Snaith, Nr. Goole, Yorks. Mr. Atkinson writes: "After my last letter I had the misfortune to lose several fishes through no fault of my own. I have two identically heated tanks of the same size. They are identical in every way except for the fishes. In one tank there were several young platies, a breeding pair of angels and a large coolie loach; the other tank contained a pair of thick-lipped gouramies,

two catfish and several tiger barbs. A single thermostat was shared by both tanks as the tanks were the same size; and the temperature remained the same in each. I know this should not really be done but I had to use it as an emergency measure some weeks ago. Unfortunately the thermostat failed to cut out and therefore the heat began to rise very quickly. It had reached 110°F by the time I noticed it! All the fishes in the tank containing the larger number died; but those in the other tank, at the same temperature, survived. This led me to believe that it was in fact not solely the temperature that had caused the deaths but also the oxygen content of the water. At 76°F the oxygen content is 6-7ml. per litre; but at 90°F and above the oxygen content is only 5 or less ml. per litre of water. Therefore the conclusion is that the oxygen content of the water becomes less at higher temperatures; thus, if necessary one could keep more fishes, depending upon size, in water at 70°F than at 80°F." (Mr. Atkinson's conclusion is correct: within limits water is capable of retaining more dissolved oxygen at lower water temperatures than it is at higher temperatures. The addition of aeration, filtration or water circulation, at higher temperatures, is beneficial to fishes kept in such water. Also, fishes lead a "faster" but shorter life in warmer water than in cooler water—within specific limits.) Mr. Atkinson continues his letter by saying: "In the September edition of *The Aquarist* I saw an advertisement for Aquarian (foods) and I can thoroughly recommend them to anyone. I remember once reading an article where one person said, 'Isn't it about time we British produced something outstanding in the fishy world?' I think they (Aquarian) have!" (I'm pleased to note that Mr. Atkinson shares my high opinion of these new foods. Additional support for the new range reached me from Mr. D. Rose to whom I recommended the new foods after testing them. Douglas, about whose fishes I have written frequently in this feature, telephoned me from London after he had tried out the Aquarian foods. He was as ecstatic in his praise of them as I am and stated that his marines were as keen on the new foods as were his freshwater fishes. Like several other people to whom I have recommended these foods, Douglas feels that he will not be returning to the former flaked foods he has been using for a number of years. I could go on at length about the excellence and freshness of these new foods—but I understand that Mr. A. Jenno will be reviewing them. I look forward to reading his comments as he was lucky enough to be able to make a trip to the aquatic laboratory of Dr. David Ford, the scientist/aquarist who produced the new foods for Aquarian, at Melton Mowbray.)



Male Guppy

Photograph 1 shows some decaying leaves on a plant of *Marsilea quadrifolia* (four-leaved water clover). The fresh plant lasted about one week in my tank before it started to decay. I'd be pleased to hear of the conditions under which you cultivate this species.

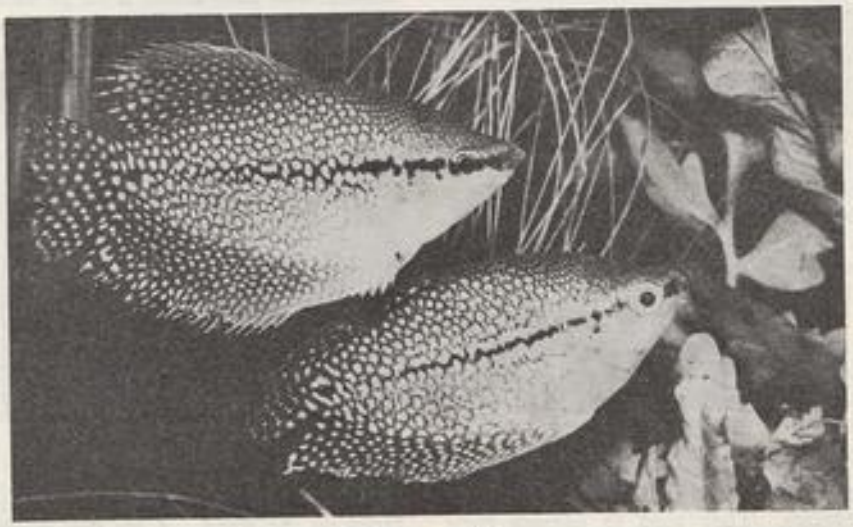
Mrs. J. Gliver lives at Springfield, Rusklake Green, Heathfield, East Sussex. She writes: "In my 24in. tank, containing mostly guppies, I keep an odd jar for any female giving birth. Recently my tank contained a straight sided drinking glass housing ten one week old babies. The rim of the glass floated about ½in. above the tank's water surface. Today one very gravid female guppy was being pestered by males and she got into the glass and had her babies in peace.

I did not see her get into the glass. Incidentally, four of her thirty young are golden. From a golden female I bred, twelve babies out of thirty were golden. Is there colour dominance in guppies? In budgies yellow is recessive to stronger colours except in the albino/lutino factor which is sex-linked."

Photograph 2 shows one of my male guppies, bought locally. In a recent feature I asked if any readers would be kind enough to sell me a true pair of good quality guppies. I'm pleased to be able to report that one reader, Mr. J. Hutchings of Preston, was kind enough to sell me several pairs—including a most attractive pair of albino guppies. Having seen the quality of Jeff's guppies for myself I can understand why he's a regular winner at shows. I'm looking forward to breeding from my new stock. I noted an interesting advertising method used by Jeff's local branch of the Fancy Guppy Association: the bags in which I received my new guppies carried an advertisement for a local aquatic dealer—and as well they provided details of the time and place of the regular meetings of the area F.G.A. section. This novel method of "club" advertising must be ideal in a given area as anyone purchasing fishes from the dealer's shop will automatically receive details of "club" meetings. Other societies and dealers could well benefit from copying the idea as both societies and dealers could gain from such joint advertising.

Our next letter contains a rap over the knuckles for me and results from my recent mention of the possibility of disposing of an ailing fish down the toilet. Mrs. M. J. Mitchell's letter is headed Gloucester Fishkeeping & Social Club, 31 Porchester Road, Hucclecote, Gloucester. Mrs. Mitchell says: "To dispose of a sick fish down the toilet to end its life in unspeakable surroundings is an act of irresponsible cruelty, and to mention the fact of doing so in such a widely read column as your own may encourage others to follow such a thoughtless example." (In my original comment in the September edition I did state that this would be a cruel method of disposing of an ailing fish; but I have yet to hear from anyone who can suggest a suitably painless method of killing an ailing fish without resorting to sordid methods such as bashing it to death or employing boiling water. Surely someone knows of a suitable chemical that could be used by those of us who don't fancy stunning or boiling sick fish. However, I take Mrs. Mitchell's point and accept her perfectly valid criticism.)

No. 66 Hall Lane, Hindley, Wigan, Lancs., is the address from which 14 years old Peter Barker writes: "With reference to your request for letters about convicts, I should like to tell you about my 'mixed' pair—one banded male and one albino female. It all began when I wanted some medium sized cichlids to try out as community fish with larger tank mates. I found some convicts at 30p each and bought three. One of these turned out to be a Jack Dempsey which, in my panic at discovering this, I sold to my friend very cheaply. I now regret having done so because it has grown to be a beautiful fish, the pride of his tank. The second of the trio was soon to die, leaving me with one small male—but he was a healthy one! It was here that the fun started. The long list of my convict's victims began with the killing of my 3 in. oscar. Next to go were some goldfish I had had for a long time. I thought that perhaps a mate would quieten him down. My friend had two albino convicts and I did



Pearl Gourami pair

a straight swop with him: two harlequins for two albino convicts. One harlequin was instantly eaten by a tiny oscar and to save the other we exchanged two of the fish in the first swop—a harlequin for a male albino convict. This left me with a female albino and a male banded convict. Instead of behaving, the male grew worse and worse. Convicts enjoy removing the eyes from live fish! Has anyone found this? I have now found a suitable set of tank mates for my pair of convicts, which is undoubtedly what they are: one *T. mossambica*, three rasboras, two kribensis and three scavengers. Of these fish the one most left alone by everything and in no apparent danger of going on the convict death list is the harlequin mentioned earlier. It seems funny, but when I think of it every time my convicts kill a fish I only like them more and spoil them more and more with meat we should be having for tea, etc. I would like to add that I find sword plants and aqua fern grow best with *Cryptocoryne* species. They tend to enmesh their roots with one another, turning all the plants into one big one in a way."

The story of the surviving harlequin reminds me of the single goldfish that shares Douglas Rose's piranha tank. I understand that the piranha has still not bothered with the goldfish. I'd be pleased to hear of any other strange tank mates. A local youngster, Reggie Meek, recently told me a story that could help to save some other aquarists from getting into similar trouble. The story concerned another local aquarist who, fairly late one night, set up a large and heavy tank on a none too sturdy coffee table. The chap lived on one of the upper floors of a high block of flats. In the middle of the night the aquarist heard a fairly loud crash but didn't get up to investigate. In the morning he found that the coffee table had collapsed, smashing the large, filled tank on to the floor. The tank and its contents were ruined—and the spilled gallons of water had soaked through his floor and down into the floor of the flat below. The under-floor heating in both flats was ruined—and the aquarist had to pay a rather hefty bill for his error. The moral of the story would appear to be: check that heavy tanks are placed on strong supports—and check on the probable final weight of a heavy tank before you decide to site it upstairs. Some aquarists don't seem to realise just how heavy a large tank can be when filled with gravel, rocks and water. Recently one of my small tanks upstairs developed a nasty leak and the ceiling of the room below ended up with a few unpleasant looking water marks. I had to call in the decorators; and the carpet in the upstairs room will never be the same again! The leaking tank, which had an angle iron frame, was so badly rusted that I decided that it should be replaced. I purchased a new 18 in. × 10 in. × 10 in. all-glass tank, with plastic frame edging, and have found it to be excellent value for £3·50. It's the first all-glass tank I have used and I was able to paint its plastic frame to match the other tanks on the stand. A tip that might be of use to newer aquarists: when I had the frame painted I coated the side, back and base glass panes with black paint. I think that black is the most useful colour for the back of the aquarium; and the black paint on the side glasses cuts out distracting light, concentrating one's attention on the front of the tank. I painted the base glass black because the stand on which the tank is situated has an "open" bottom—and clear glass lets light get at plants' roots. As most aquarists know, plants' roots are negatively phototropic, i.e. they grow away from light; hence a tank base that keeps out light is necessary for good plant growth—except in the case of plants such as hornwort which don't produce roots.

Pearl Danio

Photograph 3 shows an attractive pair of pearl gouramies, *Trichogaster leeri*, that I bred myself. I'd be pleased to hear of your breeding experiences with this species. Recently I purchased a delightful pair of *Otocinclus affinis*, the sucking catfish. My fish perform some very amusing antics and keep their tank free from algae. I'd like to hear from you if you have

kept this species. Have you managed to breed it? If so, under what conditions?

Photograph 4 shows a pearl danio, *Brachydanio albolineatus*, caught with its mouth open! A shoal of these attractive and fast moving fish makes a pleasing sight. Drop me a few lines if you've bred this species.

Mr. A. Muir lives at 5 Ednam Drive, Macedonia, Glenrothes, Fife, and he writes about *Tubifex* as a food for discus. "I have been keeping discus for about four years and in that time I have used a variety of live foods; but I am still a bit wary about using *Tubifex*. If not properly cleaned it can be lethal and I have had examples of diseases in discus caused by this live food. I find that whenever I purchase this food it contains a great number of unwanted pests such as leeches; and I have seen these pests attach themselves to discus, particularly in their gill plates. Discus seem unable to get rid of this parasite as easily as most other cichlids can. There are a few products on the market that make a good job of cleaning *Tubifex*; but I find that the best way is to keep them under running water. This also gets rid of their smell. My own favourite food for feeding to discus is *Daphnia*—and they seem to love it. In winter I use white worms in small portions; and Sera Red Gnat dry feeding. As you may know, discus are not very keen on dried foods but my own seem to thrive on this product." (I have found that my discus is very keen on Aquarian foods. I think their freshness is part of the reason as the discus snaps up flakes of all sizes with relish).

Unfortunately lack of space brings us to what must be the last of this month's letters—despite the fact that I have many more, particularly from Scottish readers from whom I'm always pleased to hear. Obviously the hobby is flourishing in Scotland. The final letter is from Mr. Phillip J. Brown, who shares my interest in aquatic plants. Mr. Brown, whose home is at 2 Longfield Road, Capel-St-Mary, Ipswich, Suffolk, writes: "I think that Mr. G. Carstairs' letter, in the September issue, raised a very important point. My particular interest is water plants and the confusion regarding their names is chronic. So many are offered under incorrect botanical names or meaningless "common" names. What help is spade-leaf or star-leaf plant in trying to identify a species! Not enough dealers take the time or trouble to correctly identify the plants—and fishes—that they sell. But in mitigation, of course, they have other demands on their time and the importers offer them very little information to go on. Botanists cause trouble too publishing their revisions of genera in obscure magazines that the ordinary aquarist will just not come across. Botanists don't often help with their disputes over the validity of some species and the change of names this can cause. However, readers might be interested in the following changes that I have noticed recently: *Aponogeton fenestralis*, *A. henkelianus* and *A. bernieranus* have all been proved, by van Bruggen, to be synonyms for *Aponogeton madagascariensis*. *Echinodorus radicans* should read *E. cordifolius*—there is little doubt that they are the same species. *Cryptocoryne willisii* has been renamed *C. axelrodii* after investigations by Karl Rataj. *Nomaphila stricta* should really be called *Hygrophila corymbosa* (Blume) Lindau. *Synnema triflorum*—water wistaria—should be called *Hygrophila difformis* (L. fil.) Blume. Thank you for what is always an interesting and thoughtful column." (I'm pleased to learn that giant *Hygrophila* has finally been accepted as a species of *Hygrophila*; but the change of name of *C. willisii* is as big a shock to me as the complete change of name of the old faithful, *P. kribensis*! It'll take years to catch up with all the changes that are taking place.)

For the next month please send me your views on the questions posed in the body of the text, and on the following: (a) Under what conditions do you cultivate *Ambulia* (*Limnophila* to those in the know)? (b) Do you find it necessary to "rest" *Aponogeton* species to obtain sustained growth? (c) What is your favourite brand of flake food? (d) Have you come across any original tips recently? (e) Do you breed any good quality guppies other than those with delta tails? If so, what shapes? (f) What have been your experiences with True-lite? I hope you'll send me a few lines on any of the above topics for the Christmas edition. Good-bye until then.

SOMETHING ABOUT WATER

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placed outdoors until the ground has become really wet. It is easy to understand why. The initial downpour will clear the air of all but an infinitesimal amount of poisonous dust and gaseous matter.

Rain water inclines to acidity rather than alkalinity. Therefore if a certain degree of acidity is called for (in an attempt to breed glowlight or cardinal tetras say) then it is best to pass it through a good quality moss peat. Those who know what they are about have a choice of, among other things, plain wine vinegar, tartaric acid or the juice of a lemon.

Before I forget, never draw a large quantity of water for fish from the metal-tank-stored hot water system. This can be deadly. Chlorinated water is best left to stand for a day or two before being used for fish. To speed up dechlorination, carbon filtration will do the trick. Alternatively, forceful stirring and splashing about in a bucket. Or after the aquarium has been filled, but before the introduction of fish, keep the water moving around for a day or so with the aid of artificial aeration. Aquarium shops also sell preparations to remove chlorine gas from water.

VIEWPOINT

by A. Jenno

THE keeping in aquaria of the less demanding of the marine invertebrates is an interesting and very rewarding aspect of our hobby. Such specimens as anemones, tube worms, shrimps, crabs, and some of the inhabitants of "living rock" seem quite easy to look after and are not too fussy with regard to water conditions. They can therefore be kept in quite small containers. An all-glass tank with dimensions 24 by 15 by 12 inches should prove adequate as an experimental first aquarium and, of course, will be much easier to set up than the larger sizes often recommended. Coral sand, coral and living rock are all fairly expensive so aquarists will probably find that an aquarium of this size will suit their finances better and that they will then be able to construct a proper coral/rock environment with sufficient quantities of the required materials to make it look natural. Nothing looks worse than a half-finished set-up where the container size has defeated the aquarist's pocket. Several worthwhile substitutions can be made in the interest of economy. Rocks from our coastline are usable if clean and taken from the sea. Flints, Portland and Westmorland Stone, and other hard kinds are excellent. Such pieces may not have the exotic appearance of dead coral material, but they can have certain advantages. Large smooth surfaces are more suitable for anemones, and do not become so entangled with algal growths. Crushed shell can be used instead of coral sand, or mixed with it, the common types being oyster or cockle shell. The latter is usually of a more suitable size for incorporation in biological filter beds. Unless one has access to a reliable source of natural sea water (such as that available at Natureland in Skegness) then a synthetic salt mix is a necessity but only a fifteen gallon pack will be required anyway. Thus the basic materials should be available to everyone.

We have five very important parameters to consider in any marine environment. Density, temperature, pH value, nitrite level, and light. Correct use of a hydrometer will take care of the density, and the inclusion of crushed shell, coral sand, coral and lime-bearing rocks will maintain the pH value by buffering if the aquarium is otherwise properly looked after. Temperature can be made more or less constant with electrical equipment or allowed to fluctuate with the ambient temperature if the aquarium is in a reasonable situation, as the hardier invertebrates do not seem to be as sensitive in this respect as are many of the fishes. A biological filtration system which has been properly matured will achieve a low nitrite level if the environment is not seriously overfed. All of the above requirements are therefore easy to control and should give no trouble, especially if regular partial water changes are made. Light, however, in terms of both intensity and duration, may prove to be most important in an invertebrate community. To assist in the simulation of a natural environment it is usual to encourage the growth of marine algaes to the point where a freshwater aquarist would be most alarmed, and many converts never lose their acquired horror of algae in quantity so that their "natural" marine tanks are not allowed to become as overgrown as often proves beneficial. Some highly developed algaes, for instance *Caulerpa prolifera*, resemble freshwater plants and can also be grown and may appeal more to those who prefer a planted appearance. It must also be remembered that many invertebrates such as some anemones and living corals have internal symbiotic algaes, called *Zooxanthellae*, which are dependant upon light and whose ill-health is transmitted to their hosts in poorly-lit environments. Water movement is a further physical parameter of some importance, and in general good circulation should be provided by means of a substantial bubble column and/or the outputs of an undergravel filter mechanism.

Other important parameters will be the maintenance of the chemical condition of the water, and the effects of the feeding programme. If the aquarist can afford to change five gallons of water per month in a fifteen gallon aquarium there should be adequate consistency of chemical composition, except that trace element additions may still be beneficial. Feeding will need to cater for various modes of food ingestion. Some invertebrates are filter feeders, taking minute particles and dissolved substances directly from the water, and can be given liquid preparations such as Liquifry Marine. Others, such as anemones, may require discreet pieces of food or small living organisms. The various frozen foods and live Brine Shrimp suit those. The true scavengers (for instance crabs and some other mobile invertebrates) take larger lumps and will use small whole shrimp, crushed aquarium snails, or small pieces of meat or fish. Care must obviously be taken in feeding, but one advantage of a mixed invertebrate community can be that the various feeding methods practised by the inhabitants can result in a situation where one creature's left-overs are used by another so that cleanliness is reasonably automatic. Where filter feeders especially are kept in quantity it may be necessary to reduce the efficiency of the biological filter to ensure that enough food material is

Continued on page 440

FROM HERE AND THERE

GENETICISTS INCREASE FISH POTENTIAL

FISH farmers will benefit from scientific research carried out at the Hebrew University of Jerusalem, and this may result in lower consumer prices for fish in Israel.

According to Associate Professor Rom Moav, "Breed improvement through selective breeding of specific traits in fish has resulted in a 10 to 15 per cent increase in the market yield". Professor Moav has spent 15 years in pioneering work in fish breeding. The fruition of this work is a superior breeder carp utilised in Israeli fisheries.

To accomplish selective breeding, geneticists at the Hebrew University, together with scientists at the Fish and Aquaculture Research Station, have developed a series of genetic markers to designate animal chromosomes which can influence key economic traits important to breeders. These markers can serve as fingerprint identification of each animal. Once fingerprinted, this information may be used to keep the purity of selected breeds with superior qualities of fertility, egg size, body weight and growth rate, as well as to establish positive identification of the progeny's parentage.

Dr. Moav has already developed superior strains of carp, which, on crossing, produce high-yielding first generation hybrids. This breeder carp, now in use in Israel, has attracted interest in the U.S., Europe and South-east Asia.

Another scientist is investigating the possibility of raising freshwater shrimps in Israel for export. The particular strain of shrimp thrives on brackish water like that found between the Dead Sea and the Red Sea. A new industry may be founded on this waste water. It is also being examined whether these shrimps will grow successfully as a by-product in fish farms already existing in the north of Israel.

Caro Trade News Syndicate

NEW APPOINTMENT

Keith Barraclough Aquarist Ltd. of Bradford announce the recent new appointment of Miss Pamela Jean Essex (28), to Company Secretary. Miss Essex joined the Company seven years ago starting as a van driver delivering aquarium accessories throughout the country. As the Company grew she progressed to stock controller and then administration controller. She is well known throughout the trade for her alertness and ability. The appointment covers the group of Companies which include Keith Barraclough Aquarist Ltd., King British Aquarium Accessories Co. Ltd., and Kannon Home Brew Centre.

TROPICAL TRIGGER COULD BE RECORD

KEITH EDDY had never been closer to tropical fish than peering at them through the glass of an aquarium. A keen sea angler, the tropical varieties that have occasionally interested him have always been rather small, and weighed only a few ounces.

But his lack of enthusiasm changed dramatically on Sunday afternoon when he is hoping, he broke the British record by landing a tropical trigger fish weighing 4lb. 7 oz.

Fishing 400 yards off Lamorna Cove from a friend's boat, 34-year-old Mr. Eddy, of Laity House, Wheal Alfred-road, Treglisson, Hayle, had caught nothing and was on the point of giving up.

"We had been fishing about two hours and had caught nothing. Suddenly the reel raced like mad and the rod bent right over," he said. "Five minutes later, when we first saw the fish I was very dubious as to what

it was and asked my friend, Derek Rogers, to slip the landing net under it."

On shore, research proved that Mr. Eddy had captured a rare visitor to these shores—a tropical trigger fish. The specimen was taken to the Marine Laboratory at Plymouth, where Mr. A. Mattacola verified Mr. Eddy's catch.

He said of his record claim: "I have been a keen sea angler for 17 years, and I little thought when I went out on Sunday that I would return a British record holder."

Sightings Fluctuate

The previous record trigger fish, records showed, weighed 4 lb. 2 oz. Mr. Mattacola said yesterday: "Fish have to be verified by me before being accepted by the committee.

"Sightings of trigger fish fluctuate from year to year. Normally you would expect half-a-dozen during August and September—the year before last we had about 22. The fish's normal habitat is sub-tropical waters."

Extract from West Briton, Truro

VIEWPOINT *continued from page 438*

left in the water for their use. This can be done by using only a one-inch layer of base material or by running the lift systems at a slow rate, in which case the resulting drop in water circulation can be compensated for by the addition of an airstone to the aquarium.

My own eighteen-inch aquarium, which was described last month, works on these lines and is improving all the time. I have since added some small pieces of sponge, a Dancing Shrimp (species unknown), a small Snakelocks anemone (*Anemonia sulcata*), and another imported seaweed which I cannot identify. The native seaweeds did not survive and neither did some very pretty native anemones which a friend brought back from Scotland, both failures being due probably to the temperature in my fish-house being too high for these specimens. Only one crab has been seen lately so the other has probably been cannibalised, and the Dancing Shrimp is disappointing in that it does not show itself very often. The sponge looks good, but may not survive long as it is known to be a difficult subject. The only continuous difficulties are caused by the crab overturning the smaller pieces of coral and rock, which disturbs the appearance of the aquarium, and a population explosion of the small transparent anemones which came with the living rock. Some of these are now two inches high and can eat Brine Shrimp in tremendous quantities. They appear to store them away inside their central column where the accumulations can be seen through the transparent body wall.

* * *

Birmingham is well-known for its soft, acidic tap water which makes fish-keeping generally very easy for those fortunate enough to live in the supply area. The common egg-laying fishes, such as many of the Barbs and Tetras, can usually be spawned in it without any complicated preparation exercises and the resulting fry grow well to make nice fishes. Plants also seem to appreciate its properties. My own tap water, on the other hand, comes from the South Staffordshire distribution area and is harder and a little alkaline. These conditions seem to favour the livebearers, Danios and some Cichlids, Malawis for example. Thus we have different conditions available in adjacent geographical areas and aquarists who have access to both waters can find advantages in transporting from one area to another. Angels frequently hatch their eggs without serious losses in Birmingham water whereas I personally find difficulty in hatching any at all in my tap water. Harlequins (*Hemigrammus pulcher*) are notoriously unsuited to Birmingham water when brought in from a hard-water area.

Aquarists who bring home fishes from a supply area different from their own should therefore always be aware of any change in characteristics present. Fishes which are really dependent upon pH and hardness values can be harmed quite easily by an extreme change. Some aquarists may be doing this continuously without realising it. In this way certain sources of supply may acquire a quite undeserved bad reputation amongst aquarists in a certain area. Advantages can be gained however, such as when healthy breeding pairs are moved across. Very often the change in conditions is enough to make them spawn in their new home immediately on settling down. A quarantine tank then becomes a spawning set-up. In these cases the direction of the change, i.e. hard-soft or vice versa, is not always important and may be contradictory to previous experience. I have had Aurulius Barbs (*Barbus aurulius*) spawn in this way when I had expected them to need softer water than I had available. It therefore pays to make any quarantine tank as sterile as possible and to provide an appropriate spawning medium in case new pairs of fishes do become influenced in this way.

Transport of water in fair quantities is not easy, of course, and the co-operation of friends, relatives or a shopkeeper will be needed for the supply from a tap, but the exercise can be very worthwhile. Even the mixing of soft water with hard can make significant improvements. Containers used for transporting must, of course, be clean and strong. Campers' water carriers are suitable, or plastic bulk wine containers can sometimes be acquired.

Aphyosemion coeruleum

THE "AFFIE O'SEMION" COUSINS

Written & illustrated by Bill Simms

MY FIRST sight of a Lyretailed Panchax (*Aphyosemion australe australe*) was many years ago, and I was impressed. I had heard much talk of brilliantly coloured tropical fish, and so far had seen only zebras, glass fish, pearl danios, and angels—all very nice, but not colourful. Now I saw what I thought was a prettily-coloured fish, and at once began to look for others like it.

I was told it was a "Killifish," or a Panchax, but this was not accurate enough. The local library had a good book on tropicals which I borrowed, and soon I had found others that were brightly coloured. But the names were hard to pronounce, and so I started to master the pronunciation of Latin in order to identify them properly.

That was a difficult task, but with the aid of a friendly grammar school master I made progress. It was when I heard his slowly-explained pronunciation of *Aphyosemion* (he said "Affie O'Semion" as if it was an Irish name) that my real liking for this group began. With a name like that, and pretty colours, too, I HAD to like them. Since then I have kept many of them, and they still hold my enthusiasm.

There are too many panchax-type fish for description here, and even in the *Aphyosemion* genera the number of different species is more than I can include, so I must restrict this article to some of those I have kept and bred.

One of the fascinating details about this genera is the difference in breeding methods. They are all West African species, from around the area we used to call the Gold Coast, and most of them have a very short life span—some living as fish for only six months or so, and earning the title of "annual fish."

A. sjoestedti, the Golden Pheasant Gularis, is one of these annual fishes, for it comes from an area with very long dry seasons, where the ponds and streams dry up completely for part of the year. It survives from season to season in the egg stage, and has to do all its growing, mating, and egg-laying during the wet season.

During this short life-span it can reach a length of 3½ in., and also develops its glorious colours. On the light brown body is a broad golden stripe, the head is blue with red markings, and the fins display bands of red, green, and blue. The golden body stripe contrasts delightfully with the bright fin colours of the male, while the female is only a little less brilliant.

This fish lays its eggs on the bottom in the mud just before the water dries up, and these eggs stay there for three to six months. While the area remains dry nothing more occurs, but as soon as the rains come to fill all the ponds and streams, the eggs hatch out. Then the baby fish grow at a furious rate, for all sorts of insect water life also develops, and there is plenty to feed on.

In the aquarium this fish is easy to spawn when the foregoing details are taken into account. The water

A. australe australe

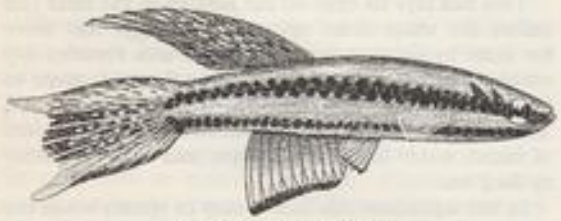
should be soft, and on the acid side of neutral, kept at about 75 to 80°F. The bottom of the spawning tank should have about 2 in. of peat, with a small flower pot in one corner to provide a sump. Fill the tank to about 2 in. from the top, and place in a pair to spawn.

Allow spawning to continue for about two weeks, and then remove the adults to another tank. At once drain off the water and store it in another heated aquarium, using the small flower pot to reduce the water to well below the level of the peat by placing the syphon tube end in that. The water reduction should be slow, and I use thin tubing left there all night to extend the operation. In this way the eggs buried in the peat are not disturbed.

A cover glass is then placed on the aquarium to conserve the moisture in the peat, and three months allowed to pass by. At least this length of time is essential, for impatience results in failure. After this period the original water—at its correct temperature—is returned to the spawning tank slowly. Once again I use a thin siphon tube, allowing the water to trickle into the flower pot, and thus soak in gradually. Within a short time the fry will hatch out, and leave the peat in search of food.

Newly-hatched brine shrimps are the best food I have used, but after a week or two the babies will have grown enough to take almost any small live foods. Although some species will take frozen food, I have never persuaded this kind to try it. Provided that plenty of live food is given it is relatively easy to breed from these youngsters when they have reached a length of about 2½ in., and I have reared a second generation in this way. It is wisest to keep this species with its own kind for, though it is fairly peaceful, it seems to pick some quarrels at times, and will always eat what it can get in its mouth.

Aphyosemion bivittatum bivittatum, the two-striped Aphyosemion, shows a totally different kind of

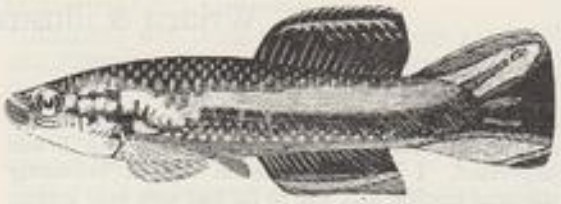


A. bivittatum bivittatum

breeding pattern, although it comes from a similar area. It reaches a length of 2½ in., but will breed when only 1½ in. long. Its colour is reddish-brown in two main horizontal stripes, with a light colour between. The long dorsal fin and the lyre tail are red and blue, with some yellow, dotted with red and blue spots, and with a greenish-white anal fin edged with a red border.

In a wild state this fish lives mainly in permanent streams, but also at times in swampy areas liable to partial drying. Most of the time it lays its eggs on floating plants, where they are stuck on with a tiny filament. Occasionally it will bury its eggs in the bottom mud—like the previous species—so that there is a good chance of survival even in a serious drought.

When bred in the aquarium floating plants of a fine nature can be supplied, but I find it best to use a tangled mass of nylon netting, tied in a loose bundle to a cork or two to make it float. On this the pair will spawn, and the eggs should hatch within about two weeks. In addition I always use a base of peat so that if the pair wish to bury their eggs they can do so. Some prefer the surface netting, and others the peat at the bottom.

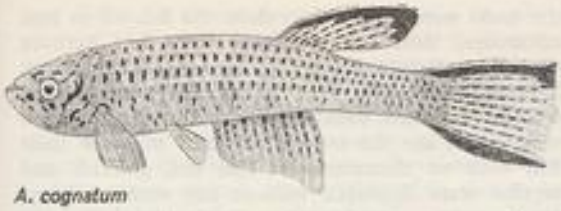


A. sjoestedi

The water should be well aged, acid, kept up to the range between 75 and 80°F, and well planted—with not too bright a light. Because this species should always be kept on their own I instal them in such a tank, and allow them to remain after the spawning. All these killifishes are most cannibalistic, but in a densely planted tank it is only the few stupid babies that get eaten, and the healthiest soon learn to keep out of the way of large fish. Provided that plenty of live food is given all the time most of the hatch can be reared with the parents present. Within a few weeks babies that have been started on brine shrimps will be showing real size, and some colour.

A. cognatum, the Red-spotted Aphyosemion, has a pale reddish-brown body, dotted with deep red spots. Its dorsal and tail fin are edged with purple-blue, and although it is not so colourful as some of its cousins this fish is really handsome. It grows to 2½ in. but can be bred when only 1½ in. long, and should be treated exactly the same as the previous species.

An alternative method to the densely planted tank to protect the young from their parents is to provide the



A. cognatum

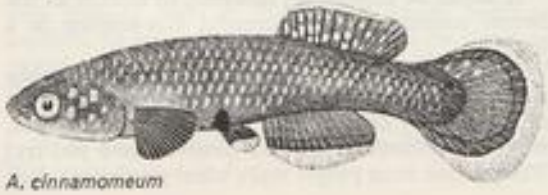
nylon netting with corks, and then, after the spawning, to remove the netting with the eggs. This can be floated in a jar, in the same tank, and there the eggs will hatch in about two weeks.

Incidentally, it has been found with all this genus that a pair will continue spawning for many weeks, but that after about three weeks the eggs are infertile. So a rest—by separation of the sexes—is essential after that period. I use a floating breeding trap in the same tank to isolate one of the pair for a fortnight or so, and then they can start again. In this way many young can be produced.

The Blue Gularis, *A. coeruleum*, is a much larger fish, and is well known because of its lovely blue colour, and the three-pronged tail with its yellow, orange, and blue colours. It reaches 5½ in., but will breed from 3 in. onward. It must be kept only with its own kind.

Although this fish is a top and bottom layer of eggs, and can be treated similarly to the others, there are some slight differences. It is mainly a bottom layer, and needs fine sand instead of peat on the bottom. Also, and this is most important, light can affect the eggs adversely, so there must be some shading. I do this by floating pieces of lettuce leaf on the surface, replacing this as necessary. Any other suitable shading could be used. The water should have a teaspoonful of cooking salt to each gallon of water, because this fish lives in slightly brackish water.

In addition to the sand at the bottom I supply nylon netting and corks, for some Blue Gularis prefer that. After two or three weeks of spawning the pair is removed for a short time while the eggs are collected. This is done by lifting out the netting, and transferring it to a brown glass jar of the same water floating in the same tank. Then a thin glass rod is used to very gently stir the sand surface, thereby releasing the eggs. They will float to the surface, and there can be gathered with an eye-dropper, and transferred to the brown jar. When this is completed the pair of adults can be replaced in their own tank.



A. cinnamomeum

The eggs take about thirty or more days to hatch at 75°F, and the fry should be fed on newly-hatched brine shrimps. They grow rapidly if well fed, and soon can go onto larger live foods, including chopped-up earthworms and other baby fishes—which is a staple diet for the adults, also.

A much smaller fish is *A. cinnamomeum*, the Cinnamon Killi, for it grows only to 2 in. long. The body is cinnamon brown dotted with metallic blue-green spots, and the tail is rounded. The tail, and the two lower fins are edged with yellow, as well as bands of dark red, and light green spots. The pectoral fins are evenly orange, which makes this fish easy to recognise.

The Cinnamon Killi is a bottom breeder, and needs the same treatment as the first fish described (the Golden Pheasant Gularis) except that the eggs are left in the barely damp peat for only one month. When the water is returned to the tank just a few hours are needed to make the eggs hatch out, after which newly-hatched brine shrimps start the babies on their way.

Possibly the most colourful of these killifishes is Ahl's Aphyosemion, *A. calliurum Ahli*, for it has a wide range of bright colours: blue, green, red, and yellow-orange in bands, spots, and as base colours.

A. calliurum ahli

This is one of the few species that can be used in a community tank, though sometimes two males will fight—without any damage. It reaches 2½ in. long, and should be given soft, slightly acid water (about 6·5 pH) at a temperature of 74 to 78°F. It is a top breeder, and needs floating plants or netting. The eggs hatch in two weeks, and the young feed well on brine shrimps.

The last of the Affie O'Semion cousins to be described at this time is the Lyretail, which is so easy to breed. It is a top breeder, in fine floating plants, and I find that it will use nylon netting readily. Use two females with each male (he is so vigorous) and after two weeks spawning remove the adults, and separate them.

The eggs hatch in about 10 days if the water temperature is reduced from its normal 75°F to about 70°F, and take a little longer if the temperature remains high. The fry feed readily on brine shrimps, but one word of warning: they grow unevenly, with some much larger than others. Large ones must be lifted out before they are of a size to eat their own brothers and sisters—anything that moves and that is small enough to go in the mouth is food to most of Affie's cousins.

OUR READERS WRITE

New Regulations Concerning Electrics

In your August issue we published an advertisement intimating that there would be new electrical regulations and that these would come into effect on 1 September.

This would have been very embarrassing for the aquarium trade, due to the very short notice which was given by the Department of Prices and Consumer Protection.

I am glad to report that following representations made by a delegation of M.P.'s led by our M.P., Sir George Sinclair, implementation of the new regulations has been delayed so that it is now legal to sell existing appliances until 1 October, 1976.

In the meantime, we intend to stick to the spirit of the new regulations by selling only units which have been modified in a way intended to comply with the regulation outlined in our advertisement, i.e. so that it is not possible to reach live electrical parts without first using some form of tool.

J. N. CARRINGTON,
Managing Director,
Interpet,
Curtis Road,
Dorking,
Surrey RH14 1EJ.

Puzzled

After a 2 hour train journey, I arrived at the Midland Aquatic Festival—my first visit to any major aquarium show. I had hoped to learn a little more about tropical fish—I am still at the early guppy-keeping stage. After seeing the rest of the show, and missing the tropical classes, I realised that their tanks were mounted in a cardboard tank (the army kind), a railway engine and similar other incongruous structures.

What is the purpose of these? A mock-up of a cemetery, including a semblance of a corpse (another weird montage) is hardly likely to encourage anyone to take up tropical fish-keeping. Some tanks were in such a position that they could only be viewed properly on hands and knees (the floor was hard!), and there were others that were so arranged that their inhabitants were difficult to see. Even where the tanks were mounted to show the fish off to best advantage, their subtle colours were lost because of the large bright doggie pictures hung beside them.

Perhaps someone with more experience in the tropical fish world could explain the reasons for these techniques; are the owners ashamed to show their fish with no distractions? The koi, goldfish and reptiles were displayed without any such modesty. It seems to me to have been such a pity that the considerable efforts of the tropical fish fanciers were hidden by tawdry hardboard and emulsion paint.

PHILIP S. CLARK,
2 Hilltop View,
Borras Park,
Wrecsam,
Clwyd. LL12 7SF.

Unfurnished Accommodation

This summer I was, quite surprisingly, very successful in breeding the common goldfish (*Carassius auratus*). This particular pair spawned three times. Twice in a 24×12×12 in. tank containing various plants weighted down with strips of lead (no gravel), a filter and diffuser, with a water temperature of 72°F and a depth of about 10 in.

The third spawning was the one that surprised me, because it took place in a tank of the same size, but completely bare and devoid of all plants and gravel, only housing the filter and air diffuser. The water temperature and depth were the same as the previous spawnings. There was also no question that this was a "tail over" from the previous spawnings.

I was forced, through lack of space, to keep only a relatively small amount of eggs, but the resultant fry are doing very well.

I would be very interested to know if anyone else has had success in spawning common goldfish in a bare tank?

In the meantime, I would like to say how much I enjoy reading this very informative and interesting magazine.

SUSAN ROBSON (15 yrs.),
Fairdown,
Bouverie Avenue South,
Salisbury, Wilts. SP2 8EB.

Healthy Koi

I read the July "Viewpoint" and the comments on Koi with interest.

It would be impossible, however, to discuss all the factors connected with successful Koi-keeping in a letter.

At the outset, it is essential to purchase *healthy* stock, preferably those which have already wintered in this country or even bred here. Once established, it is very difficult to kill Koi however hard you try! The mistake most people make when purchasing their

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first Koi is to choose the small, colourful metallics, many of which have inherent and genetic weaknesses, are thin from starvation (before shipping), disease-ridden and badly battered from bad handling during shipment. These poor creatures will probably die even with the best treatment under optimum conditions. In insanitary pools they have no chance. I can't stress enough that healthy fish should be purchased from a firm or breeder of repute. Then, after being quarantined in the usual way the new owner should experience little trouble with them—other than to keep their ravenous appetites satisfied.

Even in the B.K.K.S. opinions differ as to the value of filtration. Of course, if one has lakes to play with it is quite possible to keep Koi in natural conditions—if you never want to see them. It is because of their enormous growth rate and great beauty that filtration has become so popular. My own pond is disgracefully overcrowded but with a little extra care and attention I am able to maintain a very colourful collection of healthy, fast-growing Koi in very clear water.

I'm afraid I've waffled a bit but the simple answer to the query is that *healthy* Koi will survive in the same conditions as goldfish and certainly orfe. Should anyone be inspired to join the B.K.K.S. where help is always at hand, details may be obtained from Dave Davies, 137 Gayfield Avenue, Brierley Hill, West Midlands, DY5 2BX.

VALERIE FROST,
British Koi-Keepers' Society,
Public Relations Officer,
Southborough,
Nr. Tunbridge Wells,
Kent.

Halt

Will you please be kind enough to allow me to answer Mr. Adams's letter published in your September issue in which he attacks me for daring to protest the outrageously high price of one item on the aquarist market.

The arrogant and supercilious tone of his letter is unusual in the correspondence of the aquarist press; he infers that only "business men" and "professional aquarists" have any right to voice opinions. This is quite insupportable. There are many kinds of professional aquarist. He doesn't state which kind he means. I am happy and proud to say that I am not a businessman. The sooner that a more humane and cheaper way of distributing goods becomes available to our society the better. As for the suggested retail price, price maintenance is illegal in this country and his price is £1 more than I was asked. The dealer can sell higher or lower as he pleases.

He is quite right about British manufacturers being frightened to tool up for our hobby. In fact, looking around at things in general the British manufacturers seem frightened to tool up for anything. The lack of investment in new tools and processes is one of the root causes of our present parlous state. It goes back, unfortunately, many years. One wonders why, if the continental hobby is so prosperous, British manufacturers have not a larger slice of it.

Most amateur aquarists, the people who keep or help to keep dealers in their steak and spuds, are people who, having to maintain wife/children/home/mortgage have but a tiny fraction of the income left to lay out on an inessential interest. As this fraction tends to be smaller compared with the cost of living here than it does on the continent, the British aquarist is forced to do things as cheaply as he possibly can. Not "on the cheap" as Mr. Adams so cheaply sneers.

Having told us that we ought to be satisfied to pay through the nose for our fishes and equipment, Mr. Adams then sets up an Aunt Sally of his own to knock down and then tells us that this myth will eventuate if we continue to cut our costs. I can't speak for the rest of Britain but I have visited many pet and aquarist shops in an area bounded by Longford, Edgeware, Bow and Catford, which is a great number of square miles, and have yet to see one which approaches his horrific description. Wherever I went I was met with the courtesy and consideration he speaks of. His last sentences leave us with the impression that our interest is both unsophisticated and dishonourable, neither of which is true.

I'm glad to know that Mr. Adams is not making a fortune in his chosen trade, for to make a fortune is a shameful thing: but whenever I hear shopkeepers moaning about the long hours they work, I am often tempted to tell them that they didn't have to join. Nobody makes them do it.

Somewhere, some one must call a halt, say "No, I will not pay these ever rising prices." This is my halt.

LAURENCE SANDFIELD,
25 Leighton Road,
London W13 9EL.

Slides and Films required

The Committee of the Lincoln and District Aquarist Society have had a number of slides from Tropicure Ltd., and they have found that the standard has been far below expectation. Could any other Club put us in touch with some other distributor of Slides, Films and such materials.

MRS. S. WOODLIFFE,
(*Secretary* L.D.A.S.),
36, Richmond Road,
Lincoln LN1 1LQ.

Clarification Requested

In the September issue of *The Aquarist* Mr. Whiteside quotes a letter from a Mr. Bave of Hammersmith in which he states that a friend of his in the publishing business told him "of two 'experts' who had written a book on tropical fishes and who at the time of writing the book had not kept a single fish between them."

As Mr. Bave goes on to say that he started the hobby some 20 years ago, a number of people have drawn the conclusion that his reference to two experts who had written about tropical fishes without having kept a single fish between them, and had obtained their information from the books of others, is a reference to the undersigned, because during the last 20 years or so they are the only two experts—at all events in this country—who have collaborated in writing books about aquarium fishes.

The facts are that G.F.H. kept fish before the war, during the war and right up to some 15 years ago when he remarried; and that J.H., except for the war years when he served with the Royal Army Pay Corps, has kept fish ever since he was a boy and still keeps them though he is not far short of retirement age.

They deprecate what Mr. Bave has written because it is likely to prove damaging to their books that are now on the market, namely: *The Goldfish* (Faber and Faber) and a *Guide to Freshwater Aquarium Fishes* (Hamlyn) published in England; the *Illustrated Encyclopaedia of Freshwater Fishes* published by Doubleday in the U.S.A. and *Zoetwater Aquariumvissen* published in Belgium and Holland.

These being the facts, they think it proper to ask Mr. Bave to make the *amende honorable* by asking Mr. Whiteside to make it clear that the passage quoted from his article, "What is Your Opinion?", in the September issue is not a reference to either of them.

GEORGE F. HERVEY
Bagshot, Surrey
and
JACK HEMS,
Leicester.

Tribute

It was with deep regret that I learnt of the sad demise of Capt. L. C. Betts M.B.E. During his long career in this hobby of Fishkeeping, he was a past chairman of the F.B.A.S. and also a coldwater judge. He was a founder member of the G.S.G.B., and became its chairman, and later its president. His knowledge experience and personality will be sadly missed by all.

On behalf of the Federation of British Aquatic Societies, our deepest condolences go out to Mrs Betts, and his family circle.

F. C. TOMKINS,
Chairman F.B.A.S.

Gourami specialist

I have two tanks of freshwater tropical fish. One measures 24 in. × 10 in. × 10 in. and the other 24 in. × 12 in. × 12 in. I find *Sagittaria* and *Vallisneria* do best in both tanks. If you plant them so that some of their roots just show, they seem to do better and send out even more runners! I have a sucker loach in one of my tanks which gets rid of *all* the algae. Before I had it I couldn't control the algae at all. Housed with the sucker loach are four young angel fish. They seem to adore algae and practically live off it, so it seems. But they do eat a vast amount of TetraMin. In my other tank (24 in. × 12 in. × 12 in.) I am trying to convert it to a tank of Gouramis. At the moment it houses four cardinal tetras, one harlequin, one platy, three male dwarf gouramis, one opaline gourami, one golden gourami and a Black Red Tailed Shark. This morning I found an opaline gourami dead which was a great disappointment. I find my gouramis so very peaceful and colourful and cheap. I think your magazine is very good indeed.

ADRIAN WASHBOURNE (aged 12),
Firswood,
High Park Avenue,
East Horsley,
Surrey KT24 5DF

From a Naturalist's Notebook

by Eric Hardy

WITH a name like *Tricholeichiton fagesi*, nothing could compete for popular press headlines this summer with the carbon eyebrows and tattooed toenails of the beauty queens. Yet, in many ways, this member of the micro-caddisfly family *Hydroptilidae* was of more lasting news. Its very small aquatic larva, reared from a Cheshire pond at Irby by I. D. Wallace, an entomologist at Liverpool Museum, who told me that its identification had been checked by the British Museum, is apparently its first British record since an ancient pre-war record from Ireland and adults from a Hampshire pond in the 1930s. The pond-hunter should not confuse this family of anglers' "creepers" with the confusingly similar name of *Hydrophilidae*, water scavenger-beetles. Only by the discovery of further haunts will it be possible to decide if this is an overlooked native, or an isolated introduction with aquatic plants from elsewhere.

It is 21 years since I added the little bitterling to the British list of fishes from the discovery of its breeding in both Lancashire and Cheshire, a discovery lifted and re-recorded by the Lancashire & Cheshire Fauna Society without the usual scientific courtesy of acknowledgment. In the meanwhile, this small relative of the carps has been mapped in six counties, breeding in swan-mussels where it was originally liberated by anglers as surplus livebait. In August's heatwave, the water at Pickmere, in Cheshire, was swarming with them. Huge shoals swam and jumped in the shallows, making the surface of the water look like a cauldron. An aquarist who netted out a few to examine them told me that about a quarter had "fish-lice" attached. Though they spawn from spring to August, none had the brilliant colours they wear for courtship. Maybe they leapt from lack of oxygen as the water warmed up in the shallows, or to clean themselves of the courtship "slime."

I've frequently pointed out how modern distribution maps of fauna and flora can mislead when they lack sufficient records. The purpose of these maps is excellent, as is the technical side of their production. September's issue of the scientific journal *Endeavour* included such a map of the common frog in Britain, from the British Herpetological Society. The fact that the map is 12 years' old is hidden in the text of another page; but even in 1963 there were more frogs breeding in most counties than its limited recorders reveal. Lancashire, for instance, is marked only near Southport (where the B.H.S. rep lives), one site in the far north and a few in the east; Cheshire is under-recorded with only one in West Wirral and two in the east; Shropshire has only one in the west, and some counties with only one site. Another map of the adder is much better. One of the largest and most active field societies in these areas, with the most exhaustive files, was never consulted when these maps were made. There are so many national and local recording centres that the more active of us have neither the time nor the energy left after constant field work to do more than file notes with our local society. The onus is on the map compilers to contact the workers beyond their own small membership if they wish their maps to be complete. I suggested this to the B.H.S. rep with me on a national committee without much response. Just to insert a request in a journal and sit back for the ambitious to respond is not good enough.

Pond-snails were numerous during the last mild and very wet winter, but the dry mid-May and summer checked breeding. So many died in June's drought that the recent relatively fluke-free years will continue with the coming season even more free of liver-fluke among sheep, predicts the Ministry. Relatively few live snails were found in August, and still fewer harbouring liver-fluke, which is carried by chiefly the little *Limnaea truncatula*, though any pond-snail larger than ¼-inch is no danger to farmstock. Owing to mid-July rain in N.W. England and parts of Wales, the least flukey areas are in the drier S.E. England. However, flukey land is never absolutely free from infection. Normally, up to 4,000 of these young flat-worms emerge from one *truncatula* pond-snail in September's moist pond-side grass. Eaten by sheep or cow (rabbits also disseminate it, and song thrushes feeding on pond-side snails) it lives in their livers where it can lay 3,500 eggs a day for up to 11 years.

Now containing 109 species the U.S. federal list of animals threatened with extinction is, for the first time, to remove three species of trout—Arizona, California and Nevada trout—because the Fish & Wildlife Service's breeding and re-stocking of their haunts enable the fish to maintain their own supply again in some areas. Once near extinction, they now total "upward of a million." Until wholly safe, the trout will go on a list of "threatened" species. The alligator, no longer in danger of extinction in Louisiana swamps, will have its status changed, though still endangered in other southern areas.

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by Eric Hardy

WITH a name like *Tricholeichiton fagesi*, nothing could compete for popular press headlines this summer with the carbon eyebrows and tattooed toenails of the beauty queens. Yet, in many ways, this member of the micro-caddisfly family *Hydroptilidae* was of more lasting news. Its very small aquatic larva, reared from a Cheshire pond at Irby by I. D. Wallace, an entomologist at Liverpool Museum, who told me that its identification had been checked by the British Museum, is apparently its first British record since an ancient pre-war record from Ireland and adults from a Hampshire pond in the 1930s. The pond-hunter should not confuse this family of anglers' "creepers" with the confusingly similar name of *Hydrophilidae*, water scavenger-beetles. Only by the discovery of further haunts will it be possible to decide if this is an overlooked native, or an isolated introduction with aquatic plants from elsewhere.

It is 21 years since I added the little bitterling to the British list of fishes from the discovery of its breeding in both Lancashire and Cheshire, a discovery lifted and re-recorded by the Lancashire & Cheshire Fauna Society without the usual scientific courtesy of acknowledgment. In the meanwhile, this small relative of the carps has been mapped in six counties, breeding in swan-mussels where it was originally liberated by anglers as surplus livebait. In August's heatwave, the water at Pickmere, in Cheshire, was swarming with them. Huge shoals swam and jumped in the shallows, making the surface of the water look like a cauldron. An aquarist who netted out a few to examine them told me that about a quarter had "fish-lice" attached. Though they spawn from spring to August, none had the brilliant colours they wear for courtship. Maybe they leapt from lack of oxygen as the water warmed up in the shallows, or to clean themselves of the courtship "slime."

I've frequently pointed out how modern distribution maps of fauna and flora can mislead when they lack sufficient records. The purpose of these maps is excellent, as is the technical side of their production. September's issue of the scientific journal *Endeavour* included such a map of the common frog in Britain, from the British Herpetological Society. The fact that the map is 12 years' old is hidden in the text of another page; but even in 1963 there were more frogs breeding in most counties than its limited recorders reveal. Lancashire, for instance, is marked only near Southport (where the B.H.S. rep lives), one site in the far north and a few in the east; Cheshire is under-recorded with only one in West Wirral and two in the east; Shropshire has only one in the west, and some counties with only one site. Another map of the adder is much better. One of the largest and most active field societies in these areas, with the most exhaustive files, was never consulted when these maps were made. There are so many national and local recording centres that the more active of us have neither the time nor the energy left after constant field work to do more than file notes with our local society. The onus is on the map compilers to contact the workers beyond their own small membership if they wish their maps to be complete. I suggested this to the B.H.S. rep with me on a national committee without much response. Just to insert a request in a journal and sit back for the ambitious to respond is not good enough.

Pond-snails were numerous during the last mild and very wet winter, but the dry mid-May and summer checked breeding. So many died in June's drought that the recent relatively fluke-free years will continue with the coming season even more free of liver-fluke among sheep, predicts the Ministry. Relatively few live snails were found in August, and still fewer harbouring liver-fluke, which is carried by chiefly the little *Limnaea truncatula*, though any pond-snail larger than ¼-inch is no danger to farmstock. Owing to mid-July rain in N.W. England and parts of Wales, the least flukey areas are in the drier S.E. England. However, flukey land is never absolutely free from infection. Normally, up to 4,000 of these young flat-worms emerge from one *truncatula* pond-snail in September's moist pond-side grass. Eaten by sheep or cow (rabbits also disseminate it, and song thrushes feeding on pond-side snails) it lives in their livers where it can lay 3,500 eggs a day for up to 11 years.

Now containing 109 species the U.S. federal list of animals threatened with extinction is, for the first time, to remove three species of trout—Arizona, California and Nevada trout—because the Fish & Wildlife Service's breeding and re-stocking of their haunts enable the fish to maintain their own supply again in some areas. Once near extinction, they now total "upward of a million." Until wholly safe, the trout will go on a list of "threatened" species. The alligator, no longer in danger of extinction in Louisiana swamps, will have its status changed, though still endangered in other southern areas.

Mention of trout brings up the fact that all is not well with many commercial stocks. Since this summer, Australia bans the importation of live or dead trout, excepting those specially treated, as the precaution against the introduction of four dangerous salmonid diseases: viral haemorrhagic septicaemia, infectious pancreatic necrosis, furunculosis (fungus) and whirling disease. All these diseases occur in European fish, some in North and South America, Asia and South Africa; but so far Australian freshwater fish are free. Further on the problem of carp spreading in Australia. European carp bred illegally and offered for sale in Adelaide aquarium shops were recently seized by fishery inspectors. They took 85 carp from aquaria at Payneham and 29 from a Rundke Street department store. Anyone keeping or breeding carp including Koi carp and Dinkelsbuhler carp, in South Australia, is liable to a $100 fine. Not that they carry a disease risk, but they threaten native fish by out-breeding them.

In contrast, the discovery of the rare 3-in. "snail darter" fish by a Tennessee university professor snorkeling in the Little Tennessee River, near Lenoir City, its only known habitat, threatened to hold up construction of the Tennessee Valley Authority's $100m. dam, nearby. T.V.A. officials resisted efforts to list the fish under the Endangered Species Act of 1973.

Their case was based upon the snail-darter not being a distinct species. This rough-scaled, greenish-brown, perch-like snail-eater needs swift-flowing rivers with a clean bed, according to Dr. N. A. Etnier, its discoverer. Even with mapping, there are still some erroneous ideas about what are "rare" among British fishes. Contrary to books and "reports" stating that the 10-spined stickleback is probably not common in the Northwest, it keeps being encountered in weedy ponds in South Lancashire, Merseyside and Wirral. The common three-spined is Britain's smallest freshwater fish. The number of spines varies in the ten-spined species, *pungitius*, and Lydekker, last century's author, even called it the nine-spined species. This is the "tinker" of some dialect nicknames.

I am asked if a slow-worm, caught in the quarry at Silverdale, North Lancashire, is uncommon. In that area, and the Cumbrian border, it is common; but south of the Ribble it has become much scarcer in modern times. Excepting as escaped pets, it is now rarely found in the latter area, even where pre-war it used to bask along the sunny side of the old Woodvale (Formby) railway bank, on the dunes, and in Knowsley Park, old quarries at Speke and at Clock Face (Bold), etc. Climatic changes are probably as much to do with this change as anything else. Curiously, it is the only reptile on Bardsey Island. It has also declined in parts of Yorkshire, Hampshire and S.E. England, yet the summer of 1975 gave this and the other lizards a break, with some recovery of numbers. I could never find any of the ecologists or their societies interested in a survey we conducted of the distribution of slow-worms in the North. The same happened to Dr. Gerald Leighton, author of a leading book on British reptiles earlier this century. When he retired from work in Edinburgh about 1932, and left for the Isle of Man, he offered to bring his studies up to date in a lecture to a natural history society on whose committee I sat, and which had earlier made him an honorary member—provided they reimbursed his fare. This they declined to do, though they offered as much, or more, prize money for "the best collection of specimens" in an annual contest adding nothing to knowledge.

BOOK REVIEW

"Marine Tropical Fish in Colour" *by Braz Walker, published by Blandford Press at £1·90p.*

Following upon its highly successful predecessor in this series (*Tropical Fish in Colour* by Braz Walker), this pocket guide for the marine hobbyist is likely to prove equally popular.

Dealing with 120 species of marine tropicals, each of which is illustrated by a high quality colour photograph, the information supplied is concise supplying scientific and common names, distribution, habitat, description and care, while each group is prefixed by a page or two of general description.

As a guide book to slip into the pocket this attractive little volume is ideally suited to the newcomer to marine fishkeeping but may be also recommended as a close companion for those who visit public aquaria—especially those establishments which change tank occupants but not the identifying labels!

Apologies

On behalf of South Leeds Aquarist Society I would like to apologise to any person inconvienienced by the cancellation of our Open Show which was to have been held on 28 September, 1975. This was due to short notice cancellation of the hall owing to repair work being carried out. Owing to lack of time we were unable to find another suitable venue.

We are hoping to be able to hold another show early next year and hope that you will continue to support us as you have done in previous years.

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A SUCCESSFUL SPAWNING OF

Tropheus moorei

by Douglas & Valli Bookless

SOME FIVE years ago we acquired five small *Tropheus moorei* from Shirley Aquatics. At that time our interest was centered upon Lake Malawi Cichlids, having successfully bred *Pseudotropheus zebra* cobalts as long ago as 1967. We acquired the Moorei because of their attractive shape and lively habits, and did not realise at that time that this fish is indiginous to Lake Tanganjika.

They lived happily in our living room community tank together with our Malawi selection. Always active, their yellow-orange bands glowed and intensified with each change of mood, as did their general coloration. They ignored the Malawi Cichlids, who in turn paid no attention to them. The Malawis were primarily concerned with their caves, whilst the Moorei were primarily concerned with each other. Despite their activity, we never found any damage caused, and took great delight in watching these attractively shaped fish tumbling around each other with ever changing colour patterns.

Came a tragedy caused by a faulty exterior thermostat, and we were bereft of our show-tank inhabitants overnight.

In restocking, we always had in mind the possibility of again acquiring *Tropheus moorei* and kept our eyes open for specimens. Occasionally we came across them, but in the main found that available stock was poor. We had a certain standard in mind, and we were determined only to acquire specimens which reached it. This became a most enjoyable enterprise. We covered many miles at week-ends, and met many interesting people, also some who were not so interesting. As a result, our fish house contains a fine selection of choice Moorei which give us a great deal of pleasure.

There seem to be a number of varieties of *Tropheus moorei*, each of similar shape but of different coloration. Each variety shows virtually no interest in those of other coloration. Thus, a male *Tropheus moorei* Yellow Eye will show no interest in a female Blue Eye. However, when a female Yellow Eye comes into view, the eye of the male will glow with intensity like two neon lamps, and she will respond similarly. At the same time various colour changes will ripple along their bodies and colour bands.

Our favourites are a pair of *Tropheus moorei* Blue Eye. The male is a magnificent fellow, all of 4 inches in length, who has eyes only for the female, who is a little smaller and tends to be rather coy; they are olive green in colour with a broad light yellow-green band and bright blue eyes. We first noticed the preliminaries to breeding when the male took over a cave and started to clean it up. This was the first time that we had seen the Moorei interested in caves. During the cleaning operation, the male only broke off to chase innocent passers by in the shape of other Moorei of various denominations. Came the day when the female condescended to enter the cave following some days of display and cajoling. Interestingly enough, there was no signs of trials of strength such as typical Cichlid mouthlocking. The male merely swam patterns around the female accompanied by a great deal of colour and pattern-changing to which she gradually responded.

Once in the cave, there followed some extraordinary behaviour which we had never before seen with any Cichlid. The male began shaking in typical Rift Valley Cichlid style, but before doing so, turned on his side like a plaice. Shaking and undulating, he slowly circled the female. At first for a few seconds at a time, he gradually warmed up to the occasion until he was shaking for a full 15 seconds. After about two hours of repeated display the female began to gently nuzzle his stomach. Then she too began to display in similar fashion whilst he in turn nuzzled her. These efforts last about 20 seconds at a time alternatively, the pattern occasionally breaking whilst the male chased off the odd intruder.

We decided to leave matters as they were because conditions were obviously right for breeding otherwise the courting would not have started. The courting continued intermittently for about a week with breaks

for feeding. Both fish during this period consumed a great quantity of a variety of food and ate everything that we could think of which might prove of ultimate benefit for the intentions they obviously had in mind. Then after a week of gradual intensification of courting effort, came the big day. Early in the morning on a routine feeding visit to the fish house, the female was seen to take into her mouth three eggs from the floor of the courting cave, and then refuse all food, whilst the male swam back and forth across the entrance to repel all possible intruders. The eggs were grey-white in colour and surprisingly large, an estimated 2 mm. in diameter.

We had a hasty conference and decided to remove all the other Moorei quietly to other tanks. Then after a further conference and some heart searching, we removed the male also. It was felt that we could not risk his presence, although he showed no signs of disturbing the female. The male evinced great displeasure in being removed and became very bad tempered indeed. So much so, that we had to partition him from other fish in the tank in which we had placed him. He did not settle down for many days, and also went off his food for long enough to cause us concern. However, he survived his enforced bachelorhood.

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After 33 anxious days, three fry were released and taken back after two minutes. They were surprisingly large, about ¾ in. in length and about ¼ in. in depth and with no transparency at all. Their coloration was overall dark brown with between nine and ten yellow-beige bands around their bodies. We don't know why some had nine bands and some of them ten. Attractively enough, each had bright blue eyes like small turquoises. However, the brightness has subdued somewhat as they have grown. A *Pseudotropheus pindani* female had commenced brooding on the same day as the Moorei. They were released on the 21st day and by the 33rd day, when the Moorei released her first fry, the Pindani fry were still only about ½ in. long and were still semi-transparent.

No more fry were released by the Moorei female that day. However, the following day she released a number and we counted up to at least ten. We were astounded that she had so many and it seems that the three eggs which had been initially observed being picked up by the female must have been the last of a batch.

Remarkably, the physical size of the fry made it difficult to understand how the female could carry so much solid fish for so long in her mouth. Whilst the fry were free swimming, we gave her a small worm which she ate avidly after first carefully examining it to make sure that it was not one of her fry. We then gave her a small quantity of flake food. She chewed this and then swam down to her cave where the fry were all jostling together, and spat a cloud of particles at them, which they ate avidly. We then put in some brine shrimp which seemed to upset the female, for she took all the fry back in her mouth. She had such a mouthful that her gill plates were abnormally extended. After an hour, she released them all and then swam up and down from top to bottom at one end of the tank. We put in some more flake food which she again chewed and then spat at the fry. This seemed to set a pattern which we fell in to. When the fry were hungry, they would all peck at the female's mouth. She would then swim up and down the tank until she received some food which she would then chew and then spray at the fry waiting in the cave.

That evening as darkness fell, the female gathered her brood into her mouth. They were released the following morning and became a little more adventurous. The female fussed about and occasionally gathered in stragglers from the cave, but became increasingly confident in their prowess until by that evening they were all free swimming in every corner of the tank with the female keeping a watchful eye on them and making an occasional tour of the tank to check that no predators were about, or to shoo back the odd fry which she considered had strayed too far for too long. She was now eating well, as were the fry independantly from the female.

After a week, the fry were fully an inch long, swimming the length of the tank, playing with each other and eating normal fish foods. At first we thought that we had thirteen in number, but visiting Rift Valley Cichlid enthusiasts counted more, and we can now confirm that the female had 15 fry which must be a world record for any *Tropheus moorei*.

By now the female was in fine fettle having apparently suffered little from her long fast and heavy confinement. We put her in the tank occupied by a number of other *Tropheus moorei*, including the male with which she had spawned. They immediately showed recognition, examined each other closely and began to swim together. We now look forward, hopefully, to another family before long.

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OUR EXPERTS' ANSWERS TO YOUR QUERIES

READERS' SERVICE
All queries MUST be accompanied by a stamped addressed envelope.

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

TROPICAL QUERIES

by Jack Hems

I have purchased an old iron-framed aquarium with a cement covered metal base. Can you tell me what I should do to seal in the lime?

If the tank you have bought has had much use then I very much doubt whether you need to worry about free lime. However, as a precautionary measure, paint the dust-free bottom with black bitumastic paint and when this has become bone dry leave it to soak under several changes of water. After this treatment it should be quite safe for fish.

Would it be all right to grow the striped *acorus* rush in a wet peat bed outdoors during the warm months of the year and then transfer it to an indoor fish tank for the winter?

Provided the water is not kept very warm, that is above 75°F (24°C), the plant should survive. For all that, the smaller species of *Acorus* do demand a bright light of long duration. In short, they soon start to rot away if the light is poor.

What information can you give me about *Trichopsis schalleri*?

This croaking anabantid hails from Thailand. It attains a length of about 2 ins. Telling a male from a female is not very easy because both sexes look much alike in coloration and shape of finnage. It is an innoffensive little fish and will do well in a small tank or in a larger one with companions of a peaceable nature. It does, however, require a strictly tropical temperature. Its tank should be densely planted and kept close-covered because gulps of cold air could prove fatal. The species is a bubble-nest builder and flourishes well on a diet of gnat-larvae, Grindal worms, crushed flake food or anything prepared or alive small enough to be swallowed.

The mollies I buy never seem to live more than a few months. Do you think they have been past their best when I have bought them or do these livebearers require special conditions to stay alive?

Mollies are not so accommodating or hardy as the general run of livebearers. Firstly, they do demand plenty of swimming space in well-aerated water. Hence a 24 in. by 15 in. by 12 in. aquarium is about right for two to four mollies with no other fishes present. The water should be neutral to slightly hard and give an alkaline rather than acid reaction. Further, it should be slightly saline to brackish. A teaspoonful of ordinary cooking salt, not doctored table salt, to every gallon of water in the tank is satisfactory. The tank should be brightly lighted to encourage the growth of mossy *algae* on the glass sides. For mollies are avid eaters of *algae*, and substitutes for *algae* such as cooked lettuce, young nettles, spinach and turnip tops. The small species of duckweed are eaten too. The temperature for mollies should be maintained in the middle to upper seventies (°F).

I cannot get any plants to grow in my 24 in. by 15 in. by 12 in. tank though it is illuminated for 8 hours a day. I use a 20-watt fluorescent light in a polished aluminium hood. The temperature of the water is kept at about 75°F (24°C). Can you offer any advice?

For water plants to grow under electric light—ordinary fluorescent, tungsten or whatever—at least 10 hours a day is necessary. Next, not a few plants on the market need coaxing and special conditions to grow. You did not mention the names of the plants you have tried. In all probability, you have tried to cultivate some of the difficult ones. If you plant *Cryptocoryne affinis*, *C. griffithii*, *C. willisii*, *Microsorium pteropus* and *Vesicularia dubyana* in your aquarium, and give these plants at least 10 hours a day of warm white fluorescent light, I feel certain your efforts will be attended with success.

I have just bought four two-spot rasboras each about 1½ in. long. What is the maximum length of this active fish?

If you mean *Rasbora elegans*, which is more usually called the elegant rasbora, then this surface-frequenting cyprinid attains a length of about 6 in.

I have read quite a lot about *Hypostomus* catfish in various publications but cannot find an answer to my problem. Perhaps you can help me? About three months ago, I bought a catfish of this genus and placed it in my community tank. At the time of purchase it measured a sturdy-looking 2½ in. It has not increased in length and has become very thin. It never moves from its resting place on the compost when live food or flake food is introduced into the tank, and I can only assume that it is not getting enough to eat. What course of action should I take to put this fish on the right road to health again?

Fishes of the genus *Hypostomus* require soft algae, or a substitute for algae such as cooked spinach or scalded lettuce, included in their diet if they are to prosper. Moreover they seldom, if ever, eat at the same times as other fishes in a community tank. Essentially they are after-dark feeders. Therefore, whiteworms, flake food, and the rest, should be introduced into the aquarium a moment or two before all the lights over the tank and in the room itself are put out.

What information can you give me regarding a characin called *Leptobarbus hoevenii*?

L. hoevenii is a cyprinid and not a characin. According to the Victorian ichthyologist, A. C. L. G. Günther, who mentions this species in his book *An Introduction to the Study of Fishes*, London, 1880, it is native to Borneo and Sumatra. No details are given as to the fish's size. I imagine it attains a length of some 6 or 7 in.

My pair of convict fish are sharing a 4 ft. tank with some young firemouth cichlids. However, they keep chasing the firemouths about the tank and the latter are beginning to show missing scales and tattered fins. What can I do to stop this incessant bullying?

You will have to give the convict cichlids a tank to themselves or divide it into two compartments with the aid of a sheet of glass. Keep the convict fish in one compartment and the firemouth cichlids in the other.

Please can you give me the scientific name of the new golden gourami?

The golden gourami is not all that new—it has been around for more than four years—and it has no special scientific name because it is merely a colour variety of *Trichogaster trichopterus*.

I have been given to understand that the livebearing mosquito fish is hardy enough to tolerate a temperature down to the lower fifties (°F). Is this true?

It all depends on the species of mosquito fish you have in mind (there are several species of fish popularly known as mosquito fish). If you mean the tiny livebearer known to science as *Heterandria formosa*, then a temperature in the low fifties (°F) would certainly lead to trouble. If, however, you mean the mosquito fish formally known as *Gambusia affinis*, and its sub-species *G. a. holbrooki*, then a gradual and non-protracted drop to about 50°F (10°C) should be tolerated without ill effect.

A fellow aquarist told me that guppies thrive best in alkaline water. Is this the view of experienced keepers and breeders of this fish?

Experienced keepers and breeders of *Poecilia reticulata* appear to be of the opinion that water with a pH value of about 6·5 to 6·8 is best for this fish.

My aquarium is being spoilt by blanketing growths of fluffy or woolly algae. I have emptied the tank twice and scrubbed the decorative rockwork in strong salt water. I have even boiled the compost. Yet after setting the tank up for a third time the algae has started to grow as rampantly as before. What do you advise?

Test your rockwork and compost for alkalinity. If you spatter a few drops of sulphuric or hydrochloric acid on either the rock or a spoonful of compost and it fizzes then you can be certain that it is not doing the water any good and is promoting algal growths. If however, the compost and rockwork are inert, then your best plan would be to introduce as many plants as the tank will stand without cramping the fishes' swimming space along the front of the aquarium. For with a forest of plants and the right amount and strength of light to keep them flourishing algae will find it hard to prosper except as a green film on the front glass. And this is easy to remove every month or so with a razor blade scraper.

I should like to know the scientific name and general requirements of the Congo glass catfish?

I suppose you mean *Etropiella debauwi* from Zaire. This shoalling and midwater frequenting catfish flourishes well at the usual range of temperature (for a tropical tank) and eats almost anything wriggling or descending (waterlogged flake food) in the water.

What is the maximum length and expected life-span of the Indian loach called *Botia lohachata*?

Aquarium grown specimens usually reach a length of about 3 in. In the natural state, however, fish reaching 5 in. or more are common. The average life-span under good conditions is about 6 years.

COLDWATER QUERIES

by Arthur Boarder

Last March I introduced a pair of Sun bass into my pond and they spawned in June. I am losing a number of their fry from what appears to be a vegetable type of parasite about half an inch long, it has a forked tail and is about the thickness of a hair. It has a sucker type attaching it to a fish and the fish dies within about a week. I find that to remove the pests from a fish it takes out the flesh. What can these pests be?

There is no doubt that your fish are attacked by Anchor worm, *Lernaea*. This pest is not a worm but a parastic copepod and is a crustacean. Its correct name is:—*Lernaea cyprinacea*, and it was earlier suspected that this pest was never found in Britain; but it has since been discovered in several garden ponds in various parts of England. The pest found on your fish is a female which has an anchor-like attachment which varies in shape. The male is small, more like a *Cyclops* and the larvae live in the gills of a fish until they grow and are then a form of nauplii. The small bag at the end of the female contains the eggs in two small containers. The pests can be introduced to a pond with fresh fishes, plants, *Daphnia* or *Tubifex* from an infested source. It is difficult to clear a pond of these pests and it has been suggested that the pond is emptied and allowed to become dry for some time to kill any nauplii. *Lernaea* can be picked from a fish with tweezers after having touched it with neat T.C.P. or Dettol. The application tends to make the pest release its hold.

It can be realised from the above that it is no easy task to rid a pond of these pests but if every female seen was destroyed there would eventually be no more nauplii to infest the fishes.

I have read in a book that I can clear the green matter from my garden pond by introducing some Zebra Mussels, *Dreissena polymorpha* as they will siphon out all the green matter. Do you think this a good idea? I would be obliged to you for your reply.

I would be extremely surprised if any pondkeeper had ever cleared an Algae infested pond with the aid of these mussels. If one considers the rapid spread of this Algae in a pond exposed to the sunlight, the possibility of it being cleared by mussels brings to mind hundreds of them working overtime to keep up with the enormous numbers of Algae being formed unceasingly. Also, fresh water mussels would not live for long in a concrete-based pond but must have a plentiful supply of mud in which to move about. Then if one dies and remains unseen on the bottom it can tend to pollute the water.

The Zebra mussel is not a British subject and appears far less frequently in this country than does either the Swan mussel, *Anodonta cygnea*, or the Painter's mussel, *Unio pictorum*. If you use either of these you could find some trouble later on if they bred. During one stage of the development of the young mussel it attaches itself to a fish and remains feeding on it for some time only to drop off when fully formed. The Zebra mussel has a rather different stage of development as does not become a parasite on fishes. The presence of the young mussels on a fish may be seen as a cyst, if they are of the Swan or Painter's type.

I have a new galvanised tank in which I would like to keep goldfish. I would like your advice as to what I should paint it with as extra protection?

You will be wise to paint the tank with a good bitumastic paint as a protection. New galvanising can be very dangerous to fishes and so the tank must be covered. After the paint is dry give the tank a couple of good washings out before use.

Can I keep Sun bass in a garden pond with other fishes such as goldfish and tench?

You can keep the Sun bass in a pond with other fishes as long as they are not small enough to be eaten by the bass. You must realise that these fish are carnivorous and, like our native Perch, will attack other fishes and eat them if they are small enough to get into their large mouths.

I would like to know if there is a fish I could keep in my tank which would eat up the Algae on my plants and rocks? I have six goldfish and a catfish in the tank.

The fishes you have in your tank are capable of eating much of the soft Algae as long as you do not feed them on the ordinary fish foods. Leave the fishes unfed for a fortnight and you may be surprised to find that they will have cleared off much of the soft Algae. That they have not starved will be obvious from their copious droppings which will indicate the amount of Algae eaten.

Last winter I found some goldfish eggs in my garden pond but they did not hatch. How long do goldfish eggs take to hatch and what do you feed the fry on please?

I think that you have made a mistake in thinking

that your goldfish laid eggs in the winter. What you saw may have been something different. Small bits of jelly may have been the eggs of water snails, but I would not expect these to appear in the winter in a garden pond. Goldfish eggs are tiny beads of jelly about the size of a pin's head and are usually found adhering to water plants or blanket weed at the sides of a pond. Goldfish will spawn from April to September, although once I remember my fish spawned in early October, but this is exceptional. Goldfish eggs hatch according to the temperature of the water. At 70°-75°F., they can hatch in three and a half days. At lower temperatures they take longer, at 60°F., they could take over a week. Fry can be fed on Liquifry as sold at Pet shops.

In your book you advise to keep the pond water as pure as possible. Am I doing right to run some fresh water through a hose to the top of my water-fall to freshen up the water?

This is an excellent idea, especially during very warm weather. The fresh water reoxygenates the old and as an incentive to make the goldfish spawn, I know of nothing better. If goldfish fail to spawn during periods when they may usually be expected to do so, it is often found that they will spawn almost immediately if a quantity of fresh cold water is run into the pond. Goldfish will rarely spawn if the water is not well oxygenated.

I have just been given a two-inch calico fantail and it has a white lump about the size of a matchstick head by the first ray of the dorsal fin. What is it and how can I cure it?

The lump appears to be a small cyst. If it is not inflamed in any way I suggest that you leave well alone. The lump may be the result of slight damage to the spot or there may be a form of pest or parasite inside it. Depending on from where the fish was obtained, pond or tank, the small lump may be that the young of a fresh water mussel is inside it. If the fish had been kept in a pond where fresh water mussels have bred, it is possible for one of the young to have attached itself to the fish. A brief description of the propagation of these bivalves is that the female produces many thousands of eggs which are fertilised by male sperms, entering through a siphon, and they are then held by the mussel until the spring. They are then expelled and are known as *glockidium*. These float in the water and have a tiny sticky thread which can become attached to a water plant. If a fish swims through the water plants, the thread may stick to the fish and so the young mussel becomes a parasite on a fish. The tiny mussel embeds itself in the skin of the fish and will cause a cyst to form. When the young mussel has fully matured it leaves the fish and drops to the bottom to grow on. I have had letters from readers who have caught three-spined Sticklebacks with many of the young mussles in small lumps on the body and it seems strange that this particular fish should become the host of the young mussel any more than other fishes should. It may be that the breeding Stickleback will collect the tiny glockidia whilst rooting about for nesting material or forcing through a nest which may have some of the glockidia sticking to the weed or stems comprising the nest.

I have a fairly large pond but have been losing some fish lately. It is only after a thunder-storm that it happens and I recently lost four golden orfe. They were 10 inchs long and I had had them for about five years. Why should the orfe die and other fishes, such as goldfish and tench survive?

There is no mystery about the loss of your orfe. They died through lack of oxygen during the night of the storm. It is possible to keep orfe for some years until they grow over six inches long. Once they reach this, or above, size they need plenty of oxygen and as soon as the water becomes lacking in it, the fish are in trouble. I am sure that your dead fish showed no sign whatever of any injury or sickness but looked in perfect condition. Had you been able to find the fish in the early morning, I feel sure that you could have saved them by flushing in plenty of fresh cold water. Yours is not the only case to be reported to me and I don't suppose that it will be the last. Where large orfe are kept in a small or medium sized pond it is imperative to make sure that the water is well oxygenated, especially during very hot or thundery weather. If a fountain or water-fall is available, this should be run during the night as it is less important during the hours of daylight when the water plants are giving off oxygen.

I have got hold of some pieces of old wood from a canal. Will they be safe to use in my fish tank?

If the old wood is mature tree roots, it could be all right for your tank. You will have to make sure that it is not infested by pests and diseases. A thorough soaking for days in strong permanganate of potash will help to kill any harmful matter. Some types of wood could alter the P.H. of the water and I think that the safest material for decoration in a tank is Westmorland rock. A small amount can be made to look attractive as long as it is not overdone. The setting-up of a furnished tank for the house is a different procedure to that of one for an exhibition. If rocks are used to excess in a tank they will restrict the swimming space for the fish and after a time they can become covered in Algae and not be seen very much. The rockwork should never take up more than a small portion of the tank, about a tenth is what I suggest.

PRODUCT REVIEW

The Little Giant "Rhino" Water Pump.

The Rhino is one of a range of water-circulating power units made by the American Little Giant Corporation. This model is a large capacity pump which can be used to create a spectacular fountain in the larger ornamental pool, or can run considerable quantities of water over a fall system. With suitable pipe fittings both functions can be operated simultaneously. It is usable in a submerged or an external position and in the latter case will be self-cooling as long as the supply of circulating water is not interrupted.

The unit is very solidly constructed of high-quality materials. The motor section is completely isolated in a sealed, oil-filled container and by design is intended to be entirely free of maintenance or lubrication problems. The pump mechanism is an impeller system made of very dense plastic material, fitted with a removable chamber cover for cleaning access. Both the input and output water flow connections are threaded and a strong mesh box is supplied which can clip over the input orifice to act as a strainer when the pump is immersed in a pool. A nylon pot-scourer could be fitted inside this box to give better filtering if required.

In my own pool the pump produced a fountain which was about ten feet high when the ouput was unrestricted. The pump was silent and did not create any vibration. When used in a circulating mode the flaw rate achieved will obviously depend on the height to which the water must be carried. No figures on this were available, but under experiment at various reasonable heights the flow was considerable. The pump should run all but the very largest artificial waterfalls very satisfactorily.

In other applications water could be circulated at very fast rates between pools or other containers, and where no large height difference is involved the flow is in the order of several hundred gallons per hours. More precise information could doubtless be obtained from the manufacturers. The impeller is mounted on a metal drive shaft so there would be some doubt regarding suitability for use in sensitive saltwater systems. Other than this last comment however, there should be no criticisms of what is an extremely well designed and immaculately constructed piece of equipment. If the other pumps in the range are of the same standard then they should be significant additions to the market in this country.

Specification

Electrical—230 volts. 50 Hertz. 1 phase. Overload protection by thermal cut-out. Current 1·7 amps.
Size (with strainer mounted) approx. $7 \times 4\frac{1}{2} \times 5\frac{1}{2}$ ins.
Weight approx. 8 lbs.
Pipe connections $\frac{1}{2}$ in. B.S.P.
Mains cable length approx. $3\frac{1}{2}$ yards.

Price and Distribution

Price (at time of writing)—£39·30 plus V.A.T. at 25%.
Fountain head/flow divider—£1·50 plus V.A.T.
Distributed by Aquatic Nurseries Ltd., Aqua House, Oak Avenue, Hampton, Middlesex, TW12 3PR. Telephone 01-979 6001.

A. JENNO.

The Interpet Super Maxamatic Combined Heater-Thermostat.

Combined heater-thermostats are rapidly becoming much more popular than separate heater and thermostat installations. They offer advantages of simplicity of operation, are easier to hide amongst the aquarium decor, and are nowadays very reliable. Interpet's contribution to the available range, the Super Maxamatic, attains these standards comfortably and is robust, efficient and easily adjustable.

All the standard features of this type of instrument are present, e.g. coiled-coil heating element, silver thermostat contacts, heat-resistant glass tube, neon indicator, two-metre mains cable, etc. Where the Maxamatic does differ from some other models is that it has a new cap (bung ?) design which incorporates internal *and* external sealing around the top of the glass tube, and which is made from a material which is suitable for use in saltwater. Temperature adjustment is carried out by means of an external screw-setting mechanism which is covered by a thin protruding section of the double-sealed cap, so that it can be turned with the fingers without the aquarist having to open the instrument. An internal scale shows the markings "+ N (normal)—" and a safety stop is provided to prevent accidental over-adjustment. The initial temperature control point is preset by the manufacturers to give a reasonable start. Conditions achieved in individual aquaria at this setting will, of course, depend upon the temperature required, the water volume, heat losses around the aquarium, and so on, so as with all similar models some final trimming may be needed, but many aquarist with "average" situations will find further adjustment unnecessary.

On test the unit performed satifactorily and the aquarium stabilised at 76°F. The double-seal feature is particularly worthwhile and the unit should commend itself to marine aquarist especially because it is so well insulated from the aquarium water. The heater wattage is marked on the element internally in pencil, which in my experience survives years of use, and I also noticed that the thermostat switching differential appears to be adjustable by means of a small screw and spring arrangement should anyone wish to set up unusual conditions. A very comprehensive leaflet is

supplied containing instructions on wattage requirements, installation, adjustment, guarantee, etc. Explanatory diagrams are included. I am informed that the instrument complies with the new Board of Trade regulations which are to be introduced shortly.

Price (at time of writing) £3·10p plus V.A.T. at 25%. Distributed to the trade by Interpet, Curtis Road, Dorking, Surrey RH4 1EJ. Telephone Dorking (0306) 3202.

A. JENNO.

FOR THE HERPETOLOGIST'S BOOKSHELF

by Andrew Allen

THIS MONTH I begin my appraisal of the vivarium literature, painfully aware that most existing works draw criticism rather than compliment. I state it plain: there are no competent, advanced vivarium guides in our language. And I know of no herpetologist in Britain qualified to write such a guide. Of simple introductory books I know five; the three reviewed this month are not impressive, the two described next month are of greater merit.

Simple indeed is *Keeping A Terrarium* by S. Schmidt (in translation), Lutterworth Press, 43 pps., 1974. The lettering is large, paper good, the colour plates admirable (save only one, labelled Wall lizard when it shows Sand lizard). The text describes a handful of species and their care, at a noddy level. Design of vivaria is mentioned, there are lists of foodstuffs. Technically this is a pleasing work to handle or skim through; but I do not rate it as an introductory vivarium guide.

The treatment is far too superficial, even for the intended readership. The practical details are minimal, to the point of being irrelevent. The gorgeous photo of a Green lizard would stimulate any kid to hare round the local pet store, and put down his parent's money on the counter. But get the beauty home, and what then? The sparse information will not help keep the beast alive, let alone in health. It will die, the conservationist will sigh, and perhaps one child will have been disillusioned by the aching sight of fading colours and those bloated, wandering ticks.

For this reason I regard *Keeping a Terrarium* as misdirected, and of little use. A book on reptiles and amphibians as such, at this level, of these standards of presentation, would have earned my applause. But this book is not a primer on the beauties of reptiles, nor yet a practical introduction to the vivarium. It falls between these stools. In this context suffice to say that it is not a working book, and will not help even the raw young novice to successfully maintain his vivarium.

Nor do I like *Tortoises, Lizards and Other Reptiles* by David Le Roi 1958, Pets of Today series, Vane. This pocket-sized 96 page book contains chapters on constructing vivaria, feeding reptiles and amphibians, a few words on ailments, and comments on major species. The text is shallow, though with more practical advice than Schmidt, and a sound, if dated, section on constructing indoor cages and tanks. I dislike the absence of scientific names, and statements such as "there are only three distinct species of salamander!" The line drawings are pitiful (and I criticize from the Olympian heights of one whose drawings attracted this heartfelt comment from a Zoology tutor: "a stunted seven year old could do better"). The book has passed out of print, and few will clamour for its return.

Beginning the Terrarium is by Mervin F. Roberts, T.F.H. 1961. This provides a smattering of sound, if superficial, advice on setting up various types of vivaria—desert, woodland, bog, shoreline, aquatic—and unlike others from that publisher does not overwhelm with illustrations to the detriment of information. However the section on outdoor vivaria is miniscule, and I would contest the recommended dimensions of vivaria for different species. Pat formulae ("50 square inches per inch of shell length for the first turtle and 25 square inches per inch of shell for each additional turtle" etc.) ignore the enormous variability in habit and mobility between species under the glib umbrella of "turtle" or "lizard." And the formulae will lead to extreme overcrowding; use of the above neat maths would squeeze four three inch "turtles" into a vanishingly small mini-vivarium of 30 inches by 12 inches!

Next time I discus two further introductory guides that attain higher standards, and should prove of practical help to child, hard-pressed parent of said child, and to the novice.

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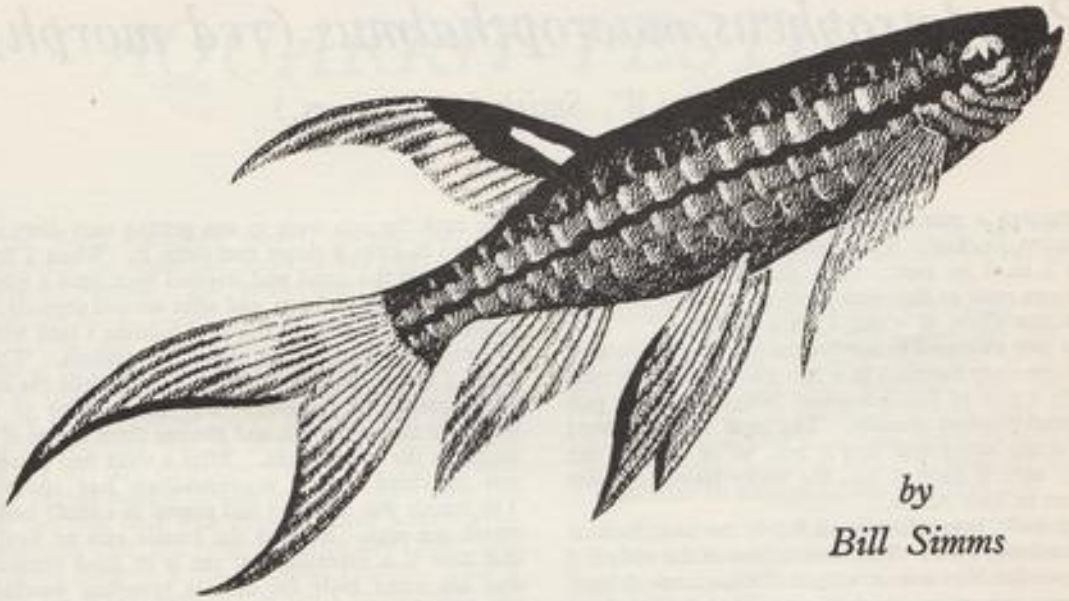
THE JUMPING CHARACIN



by
Bill Simms

For the tropical enthusiast who likes to tackle the breeding of those fishes that go about it in a different way there is one species that can provide a real difference: *Copeina arnoldi*, which has been given the common names of Jumping Characin, and Splash Tetra—most deservedly.

This small fish comes from the Amazon region, near the Rio Para, and is peaceful enough to be kept in a community tank. It has, however, a habit of jumping out of the water, and so must be confined in a covered tank. The body colouring is brownish, lightening to yellowish on the belly, and its rather long fins are well flushed with a reddish colour, with the male, as usual, having the brightest colours and longest fins. This is a most attractive fish.

In a wild state the breeding pair leap out of the water to an overhanging leaf, and stick to its underside long enough to deposit some eggs. In the aquarium suitable conditions can be provided by wedging a piece of slate (with a stone under its middle and another on its end) so that it is firmly fixed at an angle. If then the water level is lowered sufficiently to leave some of the slate out of water (but with sufficient depth of water underneath, of course) the fish will usually breed.

They prefer a water temperature of 76 to 79°F, with a neutral to slightly acid pH, and it should preferably be fairly new water to avoid too much mineral content. These fish have been known to take dried food when really hungry, but should normally be fed with a varied assortment of live foods —especially when breeding.

After about 100 eggs have been laid—needing many leaps—the male stations himself below the eggs and splashes water on them about four times an hour until they hatch. This takes about three days and then the fry hatch out, to be washed down into the water by the splashes of the male. There they swim freely and are soon seeking food. The parents must be taken away then to prevent cannibalism.

At first the babies should be given infusorians specially prepared for this purpose, but after a time can feed on newly hatched brine shrimps and similar-sized food. I have bred this fish in slightly green water (produced by standing the water in a sunny greenhouse for a week) and found that they liked it, while the fry grew rapidly. Within a few months they were real fish, and the water had lost its green tinge, though under a microscope it still contained plenty of infusorians and algae.

Junior Aquarist

Pseudotropheus macropthalmus (red morph)

by Kevan W. Smith (aged 15 yrs.)

I OBTAINED a pair of these fish at the 1974 British Aquarists Festival. They were very cheap at £5·75 for a 3 in.-4 in. pair. Since then I have only seen one large male at the open show of the East Kilbride Aquarium Club, of which I am a member.

My pair managed to survive the journey to Glasgow and were duly installed in a 36×15×12 in. tank containing a pair of *Pseudotropheus livingstonii* and a pair of *Pseudotropheus gracillis*. The tank was decorated with many slates and flower pots so as to copy the fishes' natural habitat, i.e., the rocky shores of Lake Malawi in East Africa.

The male, being the biggest fish in the tank, became the dominant male. The basic colour of the male is a pale powder-blue colour with dark blue vertical bars. The rust-red colour which distinguishes the fish from the normal colour morph covers the head and extends about ½ in. behind the gill covers. The female has no red colour at all. She is a gold-brown colour and lacks the single yellow egg-spot which the male possesses on the anal fin. Both fish have a deep body and a strangely shaped head which resembles the head shape of *Pseudotropheus fuscus*.

Both fish were 4 in. long when bought but at the time of writing the male is 5 in. long and the female 4½ in. They have never been shy and always show good colour. They were fed, as are all my fish, on as varied a diet as possible. This includes heart, liver, mussels, raw white fish, various live foods and tetra-min flakes. My Malawis are not fussy at all about anything except flakes food. They will only eat Tetra-min readily! (No, this is not an advertisement).

A lot has been written about Malawis and algae, which is their natural food in the wild. The fish in my tanks only eat algae when they are starving. They have fantastic appetites. Five pairs of adults eat 2 oz. of flaked food in a fortnight despite additional meat, fish, mussels, etc. Many dealers do not recognise this and only feed a few flakes. This is all right for Tetras, Barbs and other dainty tropicals but not Malawis. The result of this is that the fish reach the retailers in a horrible state. Some are so thin, they find it difficult to swim.

Spawning occurred under rather unusual conditions. The tank the pair were in was getting very dirty so I decided to strip it down and clean it. When I lifted the tank off the stand and stepped back onto a pile of rocks, I lost my balance, and after several seconds had elapsed I was sitting on the floor holding a tank with a broken back-glass. This posed a problem. Where could I house the fish for three weeks while the tank was glazed and resealed? My uncle came to the rescue by taking the fish and placing them in one of his tanks for the three weeks. After a week had passed I was informed the *P. macropthalmus* had spawned. The female was removed and placed in a small tank to brood the eggs. Because the female eats no food at this time it is essential that she is in good condition and has some body fat or else brooding would be terminated before the young are fully developed and able to fend for themselves. This forms a natural control of the fish in their natural habitat, i.e., if there is overcrowding there will be a shortage of food. This results in the female not being able to build up a layer of body fat. She may spawn but will not be able to starve for the three-week brooding period. She will then spit out or swallow the eggs. The numbers of young will drop as will the population level until it reaches a balance with the food available. This works the other way too, i.e., an abundance of food allows the female to build up the body fat and a large number of eggs. This results in an increase of young and an increase in population. Amazing isn't it?

The young were brooded for 21 days exactly and were then released. After the brooding the female took no further notice of her young and was removed to recuperate before being placed into the community tank. By this time the broken glass was replaced and the tank resealed. Its inmates were installed and soon settled down. The young were placed in a 2-ft. growing tank. It is interesting to know that growing fish secrete a substance into the water. If they are crowded the concentration of the substance may increase until growth rate is slowed down or even stopped. This emphasises the need for water changes. I change approximately half of my water once a week.

The young have now gained adult colours and are about to be sold.

THE FIRST YORKSHIRE AQUARIST FESTIVAL

IN the North something stirred, for the Yorkshire Association of Aquarists Societies has held its first Aquarist Festival. To those who imagine that Yorkshire are a "Coarse Breed," maybe we are, for the setting was the racecourse stand, and famous home of the St. Leger, Doncaster Race Course.

The organisers were a team of young men and women who had never before taken part in staging a festival. Bearing this in mind it is generally felt that as a first time effort they were to be congratulated. Some of that committee may now feel much older but they can look back with pride on their achievement. It was team effort that turned the idea into a reality and has given birth to a new Aquarist Festival. One of which the other members of the Confederation can look on as a sister to their own.

The quality of the tableaux and trade stands could scarcely be bettered and the generosity and friendliness shown between all those taking part had to be seen to be believed.

The fish on show at the Festival were of a high standard and praise must be given to all who exhibited for the excellent way in which they were presented. The prize winners each received a miniature silver-plated rose bowl suitable engraved for the occasion. A list of prize winners is included in the "News from Societies" section of this magazine.

It was a great delight to the committee to see the way in which the participating Societies presented both tableaux and stands. The hard work which they so freely gave reflected great credit on them. Having such an array before them the Judges had a very difficult time before finally announcing the winners as Doncaster Aquarist Society with their excellent presentation of a "Pit Head," complete with shaft and winding gear. Retford and District Society's "Church" with its wedding party and chiming bells, not to mention the last resting place of "Oscar," came second. Third was a scale model of a "Windmill," presented by our friends from Castleford and District. The market "Fruit Stall" from Worksop Society was fourth. The ideas and presentation of these four were excellent and each in its own way could so easily have taken first place.

Having said well done to the triumphant Societies it is even more difficult to pick out the runners-up who so very nearly made it.

Amongst these were the "Humber Bridge" built by Hull Society, and completed before the real one! Sailing nearby was the good ship "Go by Goole," and others included the "Bassetlaw Ark" and the "Dinner Setting" of Sheffield Society with cutlery 7 ft. long especially for those who required a large meal. These and many others all helped to make the day out at Doncaster an interesting and enjoyable one.

The trade section at the Festival were to be congratulated for their presentation and understanding. It is extremely gratifying to know that there are those in our hobby trade who are prepared to give time and money in order to assist the Yorkshire Association. They came knowing it to be our first effort and realising that they might have difficulty in making it pay, but this did not deter them. What better support could our Association ask for? We take great pride in listing these friends:

H.M. Prison (Wakefield)
J.M.C. Aquatics
Aquamarine Tropicals
King British
E. Palmer & Son
A. & J. Tropics
Thomas's
Sarony Art Products
Tropicure Products
J. & E. Aquatics
G. S. Hewitt
Aquarist & Pondkeeper
Doncaster Pet Centre
Kalvern

Gentlemen of the "trade" we thank you.

The presentation of trophies by the famous wrestler, Mr. Ian Campbell, concluded the Festival, except for the raffle draw for a complete tropical set-up including tank, stand and furnishing. The winner was the very popular President of Yorkshire, Greg Sibson. It was only at the firm request of Mr. Campbell that he finally accepted the prize.

In conclusion we would like to thank all those who contributed so much time and effort in making this Festival the success it undoubtedly was. It has given us the opportunity of staging our 2nd Festival on 20th and 21st August, 1976, when once again we invite your generous and much-needed support.

Above: The second award went to Retford and District A.S. for this well constructed model of a church.

Top left: A model of a pit-head which earned first prize in the tableaux section for Doncaster A.S.

Left: This highly colourful impression of a fruit stall won fourth place for Worksop A.S.

A long view of the magnificent modern hall at Doncaster race course where the Yorkshire Aquarists' Festival took place.

News from AQUARISTS' SOCIETIES

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

LIST of results of the **Yorkshire Aquarists** Festival: Society Furnished Aquarium: 1, Northumbrian; 2, Worksop; 3, Goole. Individual Furnished Aquarium: 1, E. Snaith; Northumbrian; 2, Mr. and Mrs. Roberts, Doncaster. Aquascape: 1, Mr. and Mrs. Stanton, Sheffield. Novelty: 1, J. Bryan, Retford; 2, Mr. and Mrs. Vernon, Retford. Common Goldfish and Comets: 1, J. S. Hall, Aireborough; 2, P. Bonsall, Worksop; 3, Mr. Hayes, Castleford. Shubunkins: 1 and 2, J. S. Hall, Aireborough; 3, M. Short, Sheaf Valley. Fancy Goldfish (Moors, Fantails, Orandas, Lionheads) and "new" varieties: 1, 2 and 3, J. S. Hall, Aireborough. A.O.V. Coldwater (including Native Marines): 1, Mr. and Mrs. Blades, Bassetlaw; 2 and 3, T. Reid, Worksop. Guppies: 1, W. Blundell, Doncaster; 2, Mr. and Mrs. Blades, Bassetlaw; 3, J. Wood, Horsforth. Mollies: 1, E. Ackroyd, Aireborough; 2, Miss J. Cavill, Doncaster; 3, M. Fothergill, Darfield. Platies: 1, J. G. Robertson, Northumbrian; 2, Mr. and Mrs. Brett, Retford; 3, Mr. and Mrs. Stanton, Sheffield. Swordtails: 1, Mr. and Mrs. P. Smith, Horsforth; 2, Mr. and Mrs. Roberts, Doncaster; 3, H. Thorpe, Doncaster. A.O.V. Livebearers: 1, M. Lister, Northumbrian; 2, Mr. and Mrs. Feasey, Doncaster; 3, T. and K. Douglas, Hull. Pairs (Livebearers): 1, J. Abbott, Aireborough; 2, J. G. Robertson, Northumbrian; 3, P. and D. Birdsall, Aireborough. Small Barbs (up to and including Nigger Barb): 1, Mr. and Mrs. Ellis, Bassetlaw; 2, V. Davison, Northumbrian; 3, G. Brown, Northumbrian. Large Barbs: 1, T. Smith, Sheffield; 2, V. Davison, Northumbrian; 3, Mr. and Mrs. Roberts, Doncaster. Small Characins (up to and including Bleeding Heart): 1, Mr. and Mrs. Brett, Retford; 2, J. S. Hall, Aireborough; 3, J. Robertson, Northumbrian. Large Characins: 1, T. Bebbington, Northumbrian; 2, A. Frisby, Hull; 3, Mr. and Mrs. Roberts, Doncaster. Rasboras: 1, V. Davison, Northumbrian; 2, Mr. and Mrs. Fletcher, Doncaster; 3, Mr. and Mrs. Davey, Scunthorpe and District. Danio: 1, G. Green, Castleford; 2, Mr. and Mrs. Stanton, Sheffield; 3, Mr. and Mrs. Askew, Retford. Minnows: 1, Mr. and Mrs. Blades, Bassetlaw; 2, Mr. and Mrs. Craven, Castleford; 3, T. Smith, Sheffield. Aphyosemion Toothcarps: 1 and 3, Mr. and Mrs. Brett, Retford; 2, T. Smith, Sheffield. A.O.V. Toothcarps: 1 and 2, Mr. and Mrs. Blades Bassetlaw; 3, N. Lynch, Northumbrian. Siamese Fighters: 1 and 3, Mr. and Mrs. Chester, Retford; 2, Mr. and Mrs. Blades Bassetlaw. Small Anabantids up to and including (Thicklip): 1 and 3, Mr. and Mrs. Chester, Retford; 2, Mr. Hayes, Castleford. Large Anabantids: 1, W. Blundell, Doncaster; 2, Mr. and Mrs. Ellis, Bassetlaw; 3, P. Staniforth, Sheaf Valley. Rift Valley Cichlids: 1, Mr. and Mrs. Scarll, Goole; 2, R. Atherton, Northumbrian; 3, Mr. and Mrs. Sawyer, Retford. Dwarf Cichlids: 1, K. Agar, Horsforth; 2, J. Wood, Horsforth; 3, N. Lynch, Northumbrian. Angels: 1, Mr. and Mrs. Lancaster, Retford; 2, P. Bonsall, Worksop; 3, Mr. and Mrs. Ellis, Bassetlaw. Corydoras Catfish (including Brochis): 1, Mr. and Mrs. Fletcher, Doncaster; 2, Mr. and Mrs. Emmerson, Castleford; 3, Mr. Jones, Rotherham. A.O.V. Cichlids: 1, T. Reid, Worksop; 2, Mr. and Mrs. Vernon, Retford; 3, G. Brow, Northumbrian. A.O.V. Catfish: 1, W. Blundell, Doncaster; 2, J. S. Hall, Aireborough; 3, M. Uster, Northumbrian. Sharks: 1, G. Brown, Northumbrian; 2, E. Eckroyd, Aireborough; 3, J. S. Hall, Aireborough. Loaches and Botias: 1, J. G. Robertson, Northumbrian; 2, Mr. and Mrs. Fletcher, Doncaster; 3, M. Toyn, Scunthorpe and District. Foxes: 1, J. G. Robertson, Northumbrian; 2, G. Thickbroom, Castleford. Pairs (Egglayers): 1, Mr. and Mrs. Chester, Retford; 2, J. Kirk, Castleford; 3, N. Jackson, Worksop. Breeders (Livebearers, 1-10): 1, B. Jackson, Doncaster; 2, W. Blundell, Doncaster; 3, M. Short, Sheaf Valley. Breeders (Livebearers 11-20): 1, Mr. and Mrs. Feasey, Doncaster. Breeders (Egglayers 1-10): 1, B. Jackson, Doncaster; 2, N. Lynch, Northumbrian; 3, Mr. and Mrs. Blades, Bassetlaw. Breeders (Egglayers 11-20): 1, Mr. G. Collier, Goole; 2, Mr. and Mrs. Blades, Bassetlaw; 3, J. G. Robertson, Northumbrian. Breeders (Coldwater): 1 and 2, J. S. Hall, Aireborough. A.O.V. Tropical: 1, M. Lister, Northumbrian; 2, G. Thickbroom, Castleford; 3, G. White, Scunthorpe and District. A.V. Female Egglayer: 1, V. Davison, Northumbrian; 2, Mr. and Mrs. Scarll, Goole; 3, Mr. and Mrs. Chester, Retford. A.V. Female (Livebearer): 1, J. Kirk, Castleford; 2, W. Blundell, Doncaster; 3, J. Abbott, Aireborough. Best in Show: T. Reid, Worksop. Best Exhibit: Mr. and Mrs. B. Chester, Retford. Best Furnished Aquarium: E. Snaith, Northumbrian. Society with most points: 1, Northumbrian; 2, Doncaster; 3, Retford. Fish of Fishes: 1, D. Sugden, Bradford; 2, J. G. Robertson, Northumbrian; 3, T. Collingwood, Hull.

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THE annual general meeting of the **Gloucester Aquarists Society** was held in September, when the following members were elected to serve on the committee for the next year: Chairman, L. Griffiths; Vice-Chairman, C. Preshney; Secretary; K. Taylor; and Messrs. P. Timmins, R. Jarvis, R. Dodson and A. Best. Society meetings are held on the first Wednesday of each month at the Lower Tuffley Old Community Centre, Tuffley Lane, Gloucester, starting at 8 p.m.

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MORE than 500 tropical and coldwater fish were on display at the **Hounslow & District A.S.** annual open show in August. The results were as follow: Class AK: 1, Mr. Kay Paine; 2, R. S. Hart. Class BA: 1, Mr. and Mrs. A. J. Crew; 2, J. Nethersell; 3, R. Canning. Class BZ: 1, T. Burvill; 2, C. Kislingbury; 3, R. F. Thoday. Class CA: 1, Mrs. P. Newbury; 2, G. Kislingbury; 3, D. S. Parrott. Class CZ: 1, Ward and Schulz; 2, R. F. Thoday; 3, D. M. Reilly. Class DB: 1 and 3, M. Carter; 2, Mrs. P. Newbury. Class DC: 1 and 2, T. A. Butler; 3, Mr. and Mrs. Houghton. Class D: 1, R. J. Canning; 2, M. Nethersell; 3, R. F. Adams. Class EA: 1, A. Thacker; 2, C. J. Richards; 3, R. Shirley. Class FZ: 1, D. M. Reilly; 2, K. Usher; 3, W. West. Class Fedef: 1 and 3, D. Brooks; 2, R. F. Thoday. Class EZ: 1, Mrs. S. Parish; 2, A. Chaplin; 3, R. F. Adam. Class G: 1, F. Farnell; 2, T. Woolley; 3, D. M. Reilly. Class H: 1, Mr. and Mrs. A. J. Crew; 2, M. Nethersell; 3, C. Kislingbury. Class J: 1, A. Chaplin; 2 and 3, A. I. Feast. Class K: 1, Mrs. P. Newbury; 2, M. Carter; 3, H. J. Foxley Brown. Class L: 1, A. C. Tull; 2, K. A. Hilier; 3, R. Crisps. Class M: 1, R. F. Thoday; 2, G. Woodhams; 3, I. Locky. Class NBT: 1, Mr. and Mrs. Houghton; 2, K. Usher; 3, J. Nethersell. Class O: 1, A. E. Noronha; 2, M. Collins; 3, C. J. Richards. Class P: 1, A. P. Constantine; 2, T. Woolley; 3, A. E. Noronha. Class Q: 1, R. F. Thane; 2, R. S. Hart; 3, B. Melch. Class R: 1, T. Burvill; 2, A. Constantine; 3, A. E. Noronha. Class S: 1, A. E. Dully; 2, V. Valley; 3, T. Reilly. Class T: 1, 2 and 3, K. Usher. Class U: a and b: 1 and 2, F. Hoppenbrowers; 3, F. Pinder. Class Uc and d: 1, 2 and 3, L. Roberts. Class V: 1 and 3, L. Roberts; 2, F. Pinder. Class W: 1, J. Shepherd; 2, F. Pinder; 3, T. Reilly. Class XBM: 1, A. E. Noronha; 2, R. Pain; 3, T. Woolley. Class XOT: 1 and 3, K. Usher; 2, M. Carter. Specialist Class: 1, K. Usher; 2, T. Woolley; 3, B. Meech.

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THE monthly meeting of the **Bournemouth A.S.** included an F.B.A.S. Slide-Tape lecture which was extremely interesting, but as the lecturer said, it was impossible to show all of the species of plants in one performance. The chairman also reminded the club that the Annual A.S.A.S. Show will take place at the Society's headquarters, Kinson Community Centre, Millhams Lane, Kinson, Bournemouth, on the 5th October, benching from 10 a.m. to 1 p.m. Table Show results: A.V. Guppy: 1 and 3, Mr. and Mrs. Bebb; 2, Master S. Haskins. A.V. Labyrinth: 1, K. S. Gibbs; 2 and 3, Mr. and Mrs. Bebb. A.V. Danio, Rasbora, W.C.M.M.: 1, Mr. and Mrs. Bebb; 2 and 3, Mr. Haskins. O.V. Pairs Livebearers (not Guppies): 1 and 2, Mrs. Bebb; 3, Mr. Pane. A.V. Characin: 1 and 2, Master S. Haskins. Tropical Pairs: 1 and 2, Mrs. Bebb; 3, Master S. Haskins. Common Goldfish: 1, Mr. Travers.

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TO help promote the hobby of tropical fishkeeping the **Huddersfield Tropical Fish Society** are holding an Open Evening on the 4th of November. The promotion, which commences at 8 p.m., will be devoted to practical demonstrations of the things every novice needs to know including tank making; fish, plant selection and care; foods and feeding; filtration; lighting; maintenance, etc. Admission is free and everybody is welcome, whether you are a fishkeeper or just thinking about it. The venue of the open evening is the Huddersfield Invalid Car Club, Mill Street, Crosland Moor, Huddersfield. Refreshments are available.

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THERE were 555 entries at the annual open show of the **Lytham A.S.** The results were: Section A, Livebearers, Guppies: 1, Mr. and Mrs. Burton, Blackburn; 2, Mr. Poulton, Northwich; 3, Mr. and Mrs. Greenhalgh, Bury. F.O.A. Mollies: 1, Mr. and Mrs. Baldwin, Sandgrounders; 2, M. Baker, Warrington; 3, E. Ackroyd, Aireborough. Swordtails: 1, Mr. and Mrs. Muckle, Sandgrounders (section winner); 2, Mr. and Mrs. Burton, Blackburn; 3, D. Adams, Wythenshawe. Platys: 1, A. Squirrell, Wythenshawe; 2, W. Bamber, Sandgrounders; 3, C. Evason, Sandgrounders. A.O.V. Livebearers: 1, C. Norton, Sandgrounders; 2 and 3, Mr. and Mrs. Baldwins Sandgrounders. Section B—Characins (up to 2 ins.): 1, E. W. Hodgson, Penrith; 2, P. and H. Batchelor, Loyne; 3, Mr. and Mrs. Muckle, Sandgrounders. Characins (over 2 ins.): 1, J. Ridley, Heywood (section winner); 2, E. Lees, Wythenshawe; 3, P. and H. Batchelor, Loyne. Section C—Barbs (up to 3½ ins.): 1, Mr. and Mrs. Stock, Farnworth (section winner); 2, R. and A. Johnson, Hyde; 3, C. Artus, Wythenshawe. Barbs (over 3½ ins.): 1, P. and H. Batchelor, Loyne; 2, A. Bickerstaffe, Blackburn;

3, R. Haigh, Blackpool. Section D—Rasboras: 1, Mr. and Mrs. Crowley, Middleton; 2, E. Lees, Wythenshawe; 3, W. Hayes, Loyne. Danio: 1, P. Wrench, Northwich (section winner); 2, W. Bamber, Sandgrounders; 3, F. W. Hodgson, Penrith. Minnows: 1, M. Baker, Warrington; 2, T. and J. Selby, Wythenshawe. Section E—Angels: 1, E. and A. Axon, Ashton-under-Lyne; 2, K. Brown, Blackburn; 3, D. and C. Gregson, Blackburn. Cichlids (Dwarf): 1, Mr. and Mrs. Burgoyne, Farnworth (section winner and Best Fish in Show); 2, A. Jenkinson, Sandgrounders; 3, Miss H. Johnson, Hyde. Cichlids (large): 1, P. and H. Batchelor, Loyne; 2, S. Hooton, Sandgrounders; 3, A. J. Austin, Five Towns. Section F—Fighters: 1, 2 and 3, G. Davies, Heywood (section winner). A.O.V. Anabantids: 1, Mst. N. and M. Rimmer, Sandgrounders; 2, Mr. and Mrs. Newton, Blackburn; 3, D. Carr, Wythenshawe. Section G—A.O.V. Catfish: 1, P. and H. Batchelor, Loyne; 2, Miss M. Burton, Blackburn; 3, W. Hayes, Loyne. A.V. Loach: 1 and 2, Mr. and Mrs. Muckle, Sandgrounders (section winner); 3, E. W. Hodgson, Penrith. A.V. Labeo or Shark: 1, Mr. and Mrs. Baldwin, Sandgrounders; 2, E. Ackroyd, Aireborough; 3, J. and K. Hinchey, Loyne. Corydoras: 1, P. and H. Batchelor, Loyne; 2, D. G. and S. Harvey, Sandgrounders; 3, Miss M. Burton, Blackburn. Flying Foxes: 1, E. Hampson, Wythenshawe; 2, A. Jenkinson, Sandgrounders; 3, Mr. Gardiner, Blackburn. Section H—Egglaying Toothcarps: 1, Mr. and Mrs. Tasker, Sandgrounders; 2, Mr. and Mrs. Marshallsea, Blackburn; 3, I. T. Powley, Penrith. Section J—A.O.V. Tropical: 1 and 2, P. and H. Batchelor, Loyne (section winner); 3, P. and M. Whelan, Blackburn. Section K—Breeders Tropical, Egglayers (Hard): 1, S. Hooton, Sandgrounders (section winner); 2, P. Squirrell, Wythenshawe; 3, E. and A. Axon, Ashton-under-Lyne. Breeders Tropical, Egglayers (Easy): 1, J. Ridley, Heywood; 2, D. A. Wilkinson, Fleetwood; 3, G. Boyes, Lytham. Breeders, Livebearers: 1 and 2, A. Masser, Sandgrounders; 3, D. and C. Gregson, Blackburn. Section L—Pairs (Egglayers): 1, Mr. and Mrs. Muckle, Sandgrounders (section winner); 2, A. Oldham, Wythenshawe; 3, Mr. and Mrs. Baldwin, Sandgrounders. Pairs (Livebearers): 1, Mr. and Mrs. Newton, Blackburn; 2, Mr. and Mrs. Marshallsea, Blackburn; 3, C. Norton, Sandgrounders. Section M—Coldwater (Common Goldfish and Comets): 1, S. Walsh, Accrington; 2, Mr. and Mrs. Wolstenholme, Blackburn; 3, C. Whitsey, Accrington. Shubunkins, Bristols, Londons: 1 and 2, C. Whitsey, Accrington. Veiltails, Fantails and Moors: 1, Mr. and Mrs. Wolstenholme, Blackburn (section winner); 2, S. Walsh, Accrington; 3, S. Foote, Accrington. A.O.V. Coldwater: 1 and 3, G. Harvey, Sandgrounders; 2, D. Harvey, Sandgrounders. Section N—Juniors (Egglayers): 1, S. Brewis, Farnworth; 2, T. Brown, Warrington; 3, J. H. Wilkinson, Fleetwood. Juniors (Livebearers): 1, Mst. P. Ridley, Heywood; 2, A. Squirrell, Wythenshawe; 3, Miss M. Burton, Blackburn. Juniors (Coldwater): 1, D. Harvey, Sandgrounders; 2 and 3, S. Foote, Accrington A.V. Marines: 1, K. Smith. Furnished Mini Jars: 1, K. Smith, Middleton; 2, Mrs. Ham, Lytham; 3, Mr. and Mrs. Muckle, Sandgrounders.

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A MEETING of the **Lewisham & District A.S.** was held in September at which a new committee was elected. The officials are: Chairman, J. Walker; Secretary, A. Higgins; Financial Secretary, Mrs. B. Goodfellow; Show Secretary, Mr. Osbourne; Assistant Secretary, Mr. Miles; P.R.O., C. J. O'Halloran. Meetings are held on the first and last Monday of each month at St. Lawrence's Church, Bromley Road.

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THERE were nearly 400 entries for the **Killingworth Aquarist Association's** first open show, and the results were as follow: Class Ba: 1, Mr. Robertson, Northumbria; 2, Mr. Duncanson, P.A.S.; 3, Mr. Ferry, K.A.A. Class Bz: 1, Mr. Lynch, S.A.S.; 2, Mr. King, R.A.S.; 3, Mr. Kennady, S.T.A.S.; 4, Mr. Risbridger, S.S.A.S. Class Cab: 1, Mr. Walton, P.A.S.; 2, Mr. Robinson, M.P.A.S.; 3, Mr. Myers, I.N.D.; 4, Mr. Costain, P.A.S. Class Ca: 1 and 3, Mr. Mooney, S.T.A.S.; 2, Mr. Duncanson, P.A.S.; 4, Mr. Risbridger, S.S.A.S. Class Db: 1, Mr. Lister, S.A.S.; 2, Mr. Kennady, S.A.S.; 3, Mr. Nicod, B.A.T.F.S.; 4, Mrs. Nellis, M.P.A.S. Class Dz: 1, Mr. Kidd, K.A.A.; 2, Mr. King, R.A.S.; 3, Mr. Hetherington, N.T.F.S.; 4, Mr. Myers, Ind. Class Dc: 1, Mr. King, R.A.S.; 2, Mr. Enright, S.S.A.S.; 3, Mr. Redford, P.A.S.; 4, Mr. Carter, N.T.F.S. Class Da: 1 and 2, Mr. Malthouse, W.A.S.; 3, Mrs. Nellis, M.P.A.S.; 4, Mr. Gray, W.A.S. Class Eb: 1, Mr. Carr, P.A.S.; 2, Mr. Embleton, S.A.S.; 3, Mr. Risbridger, A.S.A.S.; 4, Mr. Kennady, S.T.A.S. Class Ez: 1, Mr. Wright, S.S.A.S.; 2 and 4, Mr. Carr, P.A.S.; 3, Mr. Pells, P.A.S. Class F: 1, Mr. Howgate, B.A.T.F.S.; 2, Mr. Lynch, S.A.S.; 3, Mr. Middlemast, S.A.S.; 4, Mr. Prytherch, A.A.S. Class G: 1, Mr. Saunders, S.T.A.S.; 2, Mr. Wilson, K.A.A.; 3, Mr. Pells, P.A.S.; 4, Mr. Hunter, W.M.A.S. Class H: 1, Mr. Risbridger, S.S.A.S.; 2, Mr. Kennady, S.T.A.S.; 3, Mr. Liddle, B.A.T.F.S.; 4, Mr. Wright, S.S.A.S. Class J: 1 and 3, Mr. Risbridger, S.S.A.S.; 2, Mr. Askew, S.S.A.S.; 4, Mr. Davison, K.A.A. Class K: 1, Mr. Myers, Ind.; 2, Mr. Pells, P.A.S.; 3, Mr. Wright, S.S.A.S.; 4, Mr. Redford, P.A.S. Class L: 1, Mr. Wright, S.S.A.S.; 2 and 3, Mr. Turnbull, B.A.T.F.S.; 4, Mr. Liddle, B.A.T.F.S. Class Ma: 1, Mr. Wright, S.S.A.S.; 2, Mr. Pells, P.A.S. Class Mz: 1 and 2, Mr. Liddle, B.A.T.F.S.; 3, Mr. Costain, P.A.S.; 4, Mr. Renton, K.A.A. Class N(bm): 1, Mr. Myers, Ind.; 2, Mr. Wright, S.S.A.S.; 3, Mr. Wynn, K.A.A.; 4, Mr. Gilbert, K.A.A. Class N(et): 1, Mr. Kerr, Cat. Ass.; 2, Mr. Marshall, N.T.F.S.; 3, Mr. Clegg, N.G.L.S.; 4, Mr. Costain, P.A.S. Class O: 1, Mr. Marshall, N.T.F.S.; 2 and 4, Mr Myers, Ind.; 3, Mr. Harrison, B.A.S. Class P: 1, Mr. Cane, B.A.S.; 2, Mr. Ryan, B.A.S.; 3, Mr. Wright, S.S.A.S.; 4, Mr. Wood, S.T.A.S. Class Q: 1, Mr. Turnbull, B.A.T.F.S.; 2, Mr. Redhead, N.T.F.S.; 3, Mr. Walton, P.A.S.; 4, Mr. Smith, K.A.A. Class R: 1, Mr. Robertson, Northumbria; 2, 3 and 4, Mr. Marshall, N.T.F.S. Class S: 1, Mr. Costain, P.A.S.; 2, Mrs. Renton, N.G.L.S.; 3, Mr. Kennady, S.T.A.S.; 4, Mrs. Mellis, M.P.A.S. Class T: 1, Mr. Kidd, K.A.A.; 2, Mr. Howgate, B.A.T.F.S.; 3, Mr. Lister, S.A.S.; 4, Mrs. Renton, N.G.L.S. Class (bm): 1, Mr. Lynch, S.A.S.; 2, Mr. Hickman, K.A.A. Class (ot): 1, 2 and 3, Mrs. Renton, N.G.L.S.; 4, Mr. Turnbull, B.A.T.F.S. Class W: 1, Mr. Lothian; 2 and 4, Mr. Hickman, K.A.A.; Mr. Kerr, Cat. Ass. Best Fish in Show award went to Mr. Liddle with his snakehead. All winners go forward into the T.T.A.A. three rivers champion of champions competition. Two other firsts. It was the first time Winlaton Mill A.S. and Wallsend A.S. have been placed in an open show.

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DESPITE competition from local fetes and regattas there was a high attendance for the **Great Yarmouth and District A.S.** exhibition held over the August holiday period and the majority opinion was that the exhibition was well worth a visit. As in previous years the show was run on almost noncompetitive basis and aimed at the average community hobbyist rather than the specialist. The object of the society as always is to promote the hobby and help the layman with his community tank problems.

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THERE were 386 entries supported by twenty-one societies for the **Oldham and District A.S.** open show in August. The Best Fish in Show award went to S. Walsh (Accrington) with a Fancy Goldfish, and the other results were as follow: Guppies: 1, M. & M. Poulton (Northwich); 2, Mr. Axon (Ashton); 3, C. Beckenham (Oldham). Swordtails: 1, C. Beckenham (Oldham); 2, K. J. Durham (Failsworth); 3, Mr. and Mrs. N. Wilkinson (Oldham). A.O.V. Livebearers: 1, P. Walsh (Blackburn); 2, Mr. and Mrs. Baldwin (Sandgrounders); 3, Mr. Marshallsea (Blackburn). Fighters: 1, 2 and 3, T. Davies (Heywood). Large Barbs: 1, Mr. and Mrs. W. Smith (Oxram); 2, W. Brown (Warrington); 3, C. Beckenham (Oldham). Large Cichlids: 1, S. Hooton (Sandgrounders); 2, J. Ridley (Heywood); 3, S. Wolstenholme (Heywood). Small Characins: 1, Miss S. Goddard (Macclesfield); 2, P. & H. Batchelor (Loyne); 3, Mr. and Mrs. R. Houghton (Southport). Rasboras: 1, J. & G. Waterhouse (Sandgrounders); 2, Mr. and Mrs. R. Houghton (Southport); 3, D. P. Gardiner (Blackburn). Sharks: 1, D. Avery (Merseyside); 2, Mr. and Mrs. R. Houghton (Southport); 3, Mr. and Mrs. Baldwin (Sandgrounders). Toothcarps: 1, Mr. and Mrs. Marshallsea (Blackburn); 2, D. Avery (Merseyside); 3, A. Whitham (Nelson). Catfish A.O.V.: 1, D. & H. Hayes (Loyne); 2, P. & H. Batchelor (Loyne); 3, Mr. and Mrs. R. Houghton (Southport). Mollies: 1, Mrs. P. Ridley (Heywood); 2, C. Beckenham (Oldham); 3, M. Baker (Warrington). Platties: 1, K. Houghton (Southport); 2, C. Evason (Sandgrounders); 3, Mr. and Mrs. Baldwin (Sandgrounders). Anabantids: 1, Mr. and Mrs. L. Newton (Blackburn); 2, I. Hopkins (Warrington); 3, J. Taylor (Merseyside). Small Barbs: 1, J. Ridley (Heywood); 2, Mr. and Mrs. Burgoyne (Farnworth); 3, A. Chadwick (Oldham). Dwarf Cichlids: 1, A. Chadwick (Oldham); 2, J. Bate (Sandgrounders); 3, P. Wrench (Northwich). Angels: 1, K. & C. Davies (Northwich); 2, S. Harvey (Sandgrounders); 3, W. Hayes (Loyne). Large Characins: 1, P. & H. Batchelor (Loyne); 2, Mr. and Mrs. R. Houghton (Southport); 3, J. & G. Waterhouse (Sandgrounders). Danios and Minnows: 1 and 2, P. Walsh (Blackburn); 3, P. Wrench (Northwich). Flying Foxes: 1, J. O. G. Waterhouse (Sandgrounders); 2, T. & J. Selby (Wythenshawe); 3, D. P. Gardiner (Blackburn). Corydoras: 1, J. Taylor (Merseyside); 2, J. Tonge (Oldham); 3, D. G. & S. Harvey (Sandgrounders). Loaches and Botias: 1, Mr. and Mrs. Marshallsea (Blackburn); 2, Mr. and Mrs. Burgoyne (Farnworth); 3, Mr. and Mrs. L. Newton (Blackburn). Breeders Egglayers (1-10): 1, J. Ridley (Heywood); 2, D. Avery (Merseyside); 3, Mr. Axon (Ashton). Breeders Egglayers (11-20): 1, 2 and 3, S. Wolstenholme (Heywood). Breeders Livebearers (1-10): 1, Mr. and Mrs. N. Wilkinson (Oldham); 2, K. Houghton (Southport); 3, Mr. and Mrs. Baldwin (Sandgrounders). Pairs Egglayers: 1, Miss A. Gregory (E. Lancs.); 2, Mr. and Mrs. Marshallsea (Blackburn); 3, Mr. and Mrs. Burgoyne (Farnworth). Pairs (Livebearers): 1, C. Evason (Sandgrounders); 2, M. & M. Poulton (Northwich); 3, Mr. and Mrs. N. Wilkinson (Oldham). A.O.V. Tropical: 1, 2 and 3: P. & H. Batchelor (Loyne). Fancy Goldfish: 1 and 2, S. Walsh (Accrington); 3, S. Foote (Accrington). Common Goldfish: 1 and 2, Mr. and Mrs. D. Wolstenholme (Blackburn); 3, D. Harvey (Sandgrounders). A.O.V. Coldwater: 1 and 3, B. Dawson (Heywood); 2, D. Harvey (Sandgrounders). Mini-Jars Furnished (No Fish) 1 and 2, E. Jones (Wrexham); 3, N. & M. Rimmer (Sandgrounders).

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RESULTS of the **Aireborough and District A.S.** open show were as follow: Furnished Aquaria: 1 and 2, C. Freeman (Swillington). Furnished Minijar: 1, 2 and 3, Mr. and Mrs. Toyne (Sheaf Valley). A.V. Livebearer (Novice): 1, Mr. Robshaw (Swillington); 2, Mr. Whiteman (Darfield); 3, Mr. Curbishley (Darfield). A.V. Barb (Novice): 1, J. Cornforth (Bradford); 2, Mr. Curbishley (Darfield); 3, T. Robshaw (Swillington). A.V. Characin (Novice): 1 and 2, R. Jenkinson (Huddersfield); 3, Mr. and Mrs. Beaumont. A.V. Cichlid (Novice): 1, K. Gill (Huddersfield); 2, Mr. Carrick (Castleford); 3, Mr. Wright (Middleton). A.V. Anabantid (Novice): 1, Master Lake (South Humberside); 2, Master I. Essex (Heywood); 3, Mr. Campling (Swillington).

A.V Carps and Minnows (Novice): 1, P. Sugden (Bradford); 2, R. Jenkinson (Huddersfield); 3, Mr. Campling (Swillington). A.V. Catfish and Loach (Novice): 1, Mr. Robshaw (Swillington); 2, Mr. Whiteman (Darfield); 3, Mr. McBride (Aireborough). Guppies: 1, D. & M. Laycock (Sheaf Valley); 2, Mrs. Heap (Keighley); 3, Mr. and Mrs. Feasey (Doncaster). Platties: 1, Mr. and Mrs. Brett (Retford); 2, Mr. and Mrs. Holmes (Castleford); 3, Mr. Thorpe (Doncaster). Swordtails 1, Mr. Thorpe (Doncaster); 2, Mr. Smith (Horseforth); 3, Mr. and Mrs. Roberts (Doncaster). Mollies: 1, Mr. Reeve (Eboracum); 2, N. Blenkin; 3, Mrs. Appleton (South Leeds). A.O.V. Livebearer: 1, Mr. Reeve (Eboracum); 2, N. Blenkin (Bridlington); 3, Mrs. Appleton (South Leeds). Livebearer Pairs: 1, Mr. and Mrs. Feasey (Doncaster); 2, D. & P. Birdsall (Aireborough); 3, J. Abbott (Swillington). Egglayer Pairs: 1, J. Emerson (Castleford); 2, S. White (Retford); 3, Mr. and Mrs. Richardson (Scarborough). Self Coloured Fighters: 1, Mr. and Mrs. Riley (Leeds P.O.); 2, Mr. and Mrs. Rawlings (Castleford); 3, Mr. and Mrs. Green (Castleford). Multi-coloured Fighters: 1, Mr. and Mrs. Riley (Leeds P.O.); 2, Mr. Thorpe (Doncaster); 3, Mr. and Mrs. Rawlings (Castleford). Small Anabantids: 1, Mr. and Mrs. Lake (South Humberside); 2, G. Brooks (South Leeds); 3, Mr. and Mrs. Fletcher (Doncaster). A.O.V. Anabantids: 1, Miss Hall (Worksop); 2, W. Blundell (Doncaster); 3, Mr. Morgan (Castleford). Small Barbs: 1, Mr. and Mrs. Crowley (Middleton); 2, D. Sugden (Bradford); 3, Mr. and Mrs. Fletcher (Doncaster). A.O.V. Barbs: 1, Mr. and Mrs. Roberts (Doncaster); 2, P. Smith (Horsforth); 3, Mr. and Mrs. Cohen (Doncaster). Small Characins: 1, V. Davison (Northumbrian); 2, Mr. and Mrs. Brett (Retford); 3, Mr. and Mrs. Richardson (Scarborough). Large Characins: 1, Mr. and Mrs. Vernon (Retford); 2, Mr. and Mrs. Roberts (Doncaster); 3, P. Ridley (Heywood). Dwarf Cichlids: 1, Mr. and Mrs. Vernon (Retford); 2, Mr. and Mrs. Binns (Scunthorpe Museum); 3, Mr. Middlemast (Stanley). Angels: 1 and 3, Mr. Cerrick (Scarborough); 2, Mr. and Mrs. Caldow (Scunthorpe Museum). Rift Valley Cichlids: 1 and 2, Mrs. Frisby (Hull); 3, Mr. and Mrs. Fletcher (Doncaster). A.O.V. Cichlids: 1, Mr. and Mrs. Caldow (Scunthorpe Museum); 2, P. Smith (Horseforth) 3, Mr. and Mrs. Richardson (Scarborough). Corydoras Catfish: 1, Mr. and Mrs. Cohen (Doncaster); 2, Mr. and Mrs. Emerson (Castleford); 3, Mr. and Mrs. Vernon (Retford). Loaches: 1, J. Cornforth (Bradford); 2, Mr. and Mrs. Daines (Doncaster); 3, Mr. and Mrs. Binns (Scunthorpe Museum). A.V. Catfish: 1, W. Blundell (Doncaster); 2, A. Tiffany (Swillington); 3, Mr. and Mrs. Binley (Sheaf Valley). Sharks and Foxes: 1, Mr. Sugden (Bradford); 2, Mr. Shackleton (Halifax); 3, Mr. and Mrs. Holmes (Castleford). Toothcarps: 1, Master Young (Hull); 2, J. Middlemast (Stanley); 3, Mrs. Morrissey (Immingham). Rasboras, Danios and Minnows: 1, Mr. and Mrs. Green (Castleford); 2, Mr. and Mrs. Fletcher (Doncaster); 3, Mr. and Mrs. Feasey (Doncaster). A.O.V. Egglayers: 1, Mr. Turnbull (Bimbi); 2, Mr. Stead (Swillington); 3, Mr. and Mrs. Liddle (Bimbi).

A.V. Marines. Female Livebearer: 1, Mr. and Mrs. Green (Castleford); 2, B. Jackson (Doncaster); 3, D. Walker (Swillington). Female Egglayer: 1, Mr. and Mrs. Chester (Retford); 2, Master J. Ilmerson (Castleford); 3, Mr. and Mrs. Daines (Doncaster). Livebearer Breeders (1-10): 1, J. Abbott (Swillington); 2, D. Turnbull (Bimbi); 3, W. Blundell (Doncaster). Livebearers Breeders (11-20): 1, Mr. and Mrs. Richardson (Scarborough). Egglayers Breeders (1-10): 1, B. Jackson (Doncaster); 2, Mr. and Mrs. Fletcher (Doncaster); 3, Mr. and Mrs. Toyne (Sheaf Valley). Egglayers Breeders (11-20): 1, Mr. Nicholls (Swillington); 2, Mr. Seaman (Swillington); 3, Mr. Cope (Doncaster). Junior Livebearer: 1, Master J. Emerson (Castleford); 2, Master P. Ridley (Heywood); 3, Master S. White (Retford). Junior A.V. Egglayer: 1, Miss L. Ridley (Heywood); 2, Master J. Emerson (Castleford); 3, M. & T. Holmes (Castleford). Breeders Twintail 6 Fish (Coldwater): 1 and 2, J. S. Hall (Aireborough). Common Goldfish and Comets: 1, Mr. Shaw (Sheaf Valley); 2, S. Walsh (Accrington). Shubunkins: 1, Mr. Shaw (Sheaf Valley); 2, J. S. Hall (Aireborough).

Veiltail. Orandas: 1, Master I. Essex (Heywood). Lionheads: 1, J. S. Hall (Aireborough). Moors: 1, 2 and 3: S. Walsh (Accrington). Fantails: 1, 2 and 3, S. Walsh (Accrington). A.V. Fancy Goldfish: 1, J. S. Hall (Aireborough). A.V. Coldwater (European): 1, T. Read (Worksop); 2, Mr. and Mrs. Riley (Leeds P.O.); 3, S. Walsh (Accrington). A.V. Coldwater (North American and Asian): 1 and 2, S. Walsh (Accrington); 3, Mr. Blundell (Doncaster). Highest pointed society: Doncaster. Highest pointed exhibitor: S. Walsh, Accrington.

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AT the September meeting of the **Mid-Sussex A.S.** the main part of the evening was taken up by questions, from the club members, on both fish and club subjects, which were answered by the committee. One question brought about an appeal from J. Burtles (show secretary) for more support from club members for club functions, especially interclub meetings.

Details for the Presentation, Buffet Dance, at the Queens Hall, Cuckfield, on 14th February, 1976, were announced by Mrs. S. Corbin. Everybody is welcome, and tickets are available, at £1.75 each, from Mrs. S. Corbin, 80 Marlborough Drive, Burgess Hill. Phone: 41632.

The monthly table show was judged by D. Soper, in the place of Mr. T. Bellingham, who unfortunately could not attend. Results: Class B (Barbs): 1, R. Stanger; 2, B. Burtles; 3, C. West; 4, E. & T. Tester. Class Db (Dwarf Cichlids): 1 and 3, A. & P. Lewis; 2, S. Burtles. Class D (A.O.S. Cichlids): 1, D. Anscombe; 2, B. Burtles; 3, A. Holmes; 4, Mr. and Mrs. Houghton. Information concerning the society may be obtained from the Secretary, Mr. B. Slade, "Sandown", Bolney Road, Ansty. Phone: Haywards Heath 53747.

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TABLE show results at the September meeting of **Stockton-on-Tees A.S.** were as follow: Mollies: 1, Mr. and Mrs. Kennedy; 2, 3 and 4, Mr. and Mrs. Wood. Swordtails: 1, Mr. and Mrs. Kennedy; 2 and 3, Mr. and Mrs. Wood; 4, W. Mooney. There were also a quiz, a raffle and an auction. The Secretary is Mrs. R. Wood, 67 Victor Way, Thornaby. Tel. 615394 (Stockton).

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RESULTS of the **Harlow A.S.** open show were as follow: Class AA: 1, Harlow A.S.; 2, Stevenage A.S. Class AK: 1, Miss Hill (Walthamstow A.S.); 2, Mrs. Taylor (Harlow A.S.); 3, P. Murdock (Harlow); 4, D. Watts (Walthamstow). Class B: 1, Mrs. Cruickshank (Ealing); 2, R. Thoday (Dunmow); 3, D. Henman (Dunmow); 4, R. Van Dersteen (Harlow). Class C: 1, J. Stock (Harlow); 2, C. Saunders (Harlow); 3, Mr. Tilley (Saracens); 4, A. Noronha (Kent). Class CA: 1 and 2, M. Clark (Harlow); 3, R. Thoday (Dunmow); 4, D. Ingle (Chingford). Class DB: 1, P. Matthews (Harlow); 2, A. Noronha (Kent); 3, J. Stock (Harlow); 4, Mr. Bartlett (Sudbury). Class DZ: 1, R. Plume (Symonds); 2, M. Nethersell (Riverside); 3 and 4, G. Woodhams (Tonbridge). Class EQ: 1, P. Matthews (Harlow); 2, P. Garner (Saracens); 3 and 4, R. Kerridge (Harlow). Class EZ: 1, P. Garner (Saracens); 2, J. Lambert (Harlow); 3, Mr. Fry (N. Kent); 4, D. Henman (Dunmow). Class F: 1, C. Thomas (Walthamstow); 2, K. Usher (Doncaster); 3, R. Thoday (Dunmow); 4, T. Hurley (Harlow). Class G: 1, P. Farnell (Best Fish in Show) (Tonbridge); 2, R. Thoday (Dunmow); 3, M. Nethersell (Riverside); 4, T. Cruickshank (Ealing). Class H: 1 and 4, M. Nethersell (Riverside); 2, M. Williams (Harlow); 3, A. Noronha (Kent). Class J: 1, P. Matthews (Harlow); 2 and 4, R. Thoday (Dunmow); 3, B. Barford (Saracens). Class K: 1, R. Thoday (Dunmow); 2, T. Letuizot (Roehampton); 3, C. McKay (Sudbury); 4, S. J. Bartlett (Sudbury). Class L: 1, M. Williams (Harlow); 2 and 4, A. Noronha (Kent); 3, P. Huckle (Harlow). Class M: 1, S. Hedges (Bethnal Green); 2, Mr. Puschard (Tonbridge); 3, T. Cruickshank (Ealing); 4, R. Thoday (Dunmow). Class N (B-M): 1, A. Noronha (Kent); 2, T. Cruickshank (Ealing); 3, R. Thoday (Dunmow); 4, R. Rowland (Dunmow). Class N (O-T): 1, D. Cheswright (Southend); 2 and 4, K. Usher (Doncaster). Class O: 1, P. Hynes (Harlow); 2, A. Noronha (Kent); 3, B. Mannings (Roehampton); 4, Mr. McKay (Sudbury). Class P: 1, M. Williams (Harlow); 2, B. Mannings (Roehampton); 3, A. Noronha (Kent); 4, K. Usher (Doncaster). Class Q: 1, R. Thoday (Dunmow); 2, K. Usher (Doncaster); 3, A. Noronha (Kent); 4, P. Hynes (Harlow). Class R: 1 and 2, A. Noronha (Kent); 3, K. Usher (Doncaster); 4, M. Williams (Harlow). Class S: 1, R. Kerridge (Harlow); 2, S. Jordan (Harlow); 3, M. Nethersell (Riverside); 4, B. Manning (Roehampton). Class T: 1 and 3, K. Usher (Doncaster); 2, A. Noronha (Kent); 4, D. Cheswright (Southend). Class W: 1, S. Hedges (Bethnal Green); 2, J. Hughes (Roehampton); 3, M. Williams (Harlow); 4, Mr. Fry (N. Kent). Class X (B-M): 1, A. Noronha (Kent); 2, Mrs. Tilley (Saracens); 3, D. Cheswright (Southend); 4, P. Matthews (Harlow). Class X (O-T): 1, 2 and 4, K. Usher (Doncaster); 3, M. Clark (Harlow).

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RECENT activities of the **Hounslow & District A.S.** have been well supported, and these included a coach outing to Brighton to compete in the Brighton and Southern open show, where some of the Hounslow members took awards in several classes. The Best Fish in Show award was taken by a very fine Ctenopoma Kingsleyae owned by Mrs. Sylvia Parrish, treasurer of the H.D.A.S. Mrs. Parrish has received Best Fish in Show awards on three previous occasions with this fish. The society were hosts to a team of West View D. members recently to compete in a general knowledge quiz. A very enjoyable evening was spent for all concerned, with West View D. the successful winners.

The society meetings are held on alternate Wednesdays at 8 p.m. at St. Stephen's Church Hall, Whitton Road, Hounslow. Visitors are always welcome. All enquiries to the secretary, Mr. H. Parrish, 18 The Barons, Twickenham.

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RESULTS of the **Midland Aquarist League** inter-society show held in September were: A.V. Characin (Section A): 1, C. Pratt (Bedworth); 2 and 5, Mr. and Mrs. Chamberlain (Leamington); 3, F. Hirst (Coventry); 4, R. Tedds (Bedworth); 6, I. Purdy (Loughborough). A.V. Characin (Section B): 1, Mr. and Mrs. Short (Hinckley); 2, T. Parry (Loughborough); 3, F. Hirst (Coventry); 4, C. Pratt (Bedworth); 5 and 6, D. White (Bedworth). Goldfish (Single Tail): 1, R. Hancox (Coventry); 2 and 6, D. Basingwood (Coventry); 3 and 4, B. Chittenden (Leamington); 5, Mr. Ansell (Rugby). Goldfish (Twin Tail): 1 and 2, D. Basingwood (Coventry); 3 and 4, R. Hancox (Coventry); 5 and 6, Mr. Ansell (Rugby). Egglayer (Pairs): 1, G. Williams (Rugby); 2, F. Hirst (Coventry); 3, T. Parry (Loughborough); 4, D. Trigg (Leamington); 5, Michelson (Goodyers End); 6, D. White (Bedworth). Best in Show: D. Basingwood (Coventry). Pennail Goldfish. Pointings for Show: Coventry P. & A.S., 44 pts.; Leamington & D.A.S., 17 pts.; Bedworth A. & P.S., 16 pts.; Rugby Fishkeepers, 11 pts.; Loughborough D.A.S., 10 pts.; Hinckley & D.A.S., 6 pts.; Goodyers End A.S., 2 pts. Total Points to Date: Coventry P. & A.S., 80 pts.; Bedworth A. & P.S., 40 pts.; Hinckley & D.A.S., 35 pts.; Leamington & D.A.S., 28 pts.; Loughborough & D.A.S., 24 pts.; Goodyers End A.S., 15 pts.; Rugby Fishkeepers, 11 pts.

3, I. Peirce (High Wycombe); 4, G. & P. Woolford (Bracknell). Platies: 1, 2 and 4, L. Littleton (Bristol); 3, R. Onslow (Kingsclere). Mollies: 1, B. Ashcroft (Rhondda); 2, P. Moye (Sudbury); 3, R. Dodson (Cotswold); 4, R. Adams (Salisbury). Livebearer A.O.S.: 1, K. Usher; 2, A. Chaplin (Basingstoke); 3, T. Burvill (Basingstoke); 4, K. Usher. Pairs: 1, A. Rigby (Gosport); 2, A. Chaplin (Basingstoke); 3, A. Blake (Basingstoke); 4, P. Newbury (Gosport). N.o-t. Pairs: 1, E. Pankhurst (Bracknell); 2, A. Weare (Southampton); 3, C. Turner (Cardiff); 4, A. Marshall (J) (Basingstoke). Goldfish: 1 and 3, R. Cowley (Gosport); 2, E. Binstead (Portsmouth); 4, F. Pinder. Shubunkins: 1, R. Hard (Haslemere); 2, A. Marshall (Basingstoke); 3, F. Pinder; 4, E. Binstead (Portsmouth). Shubunkins: 1, 2 and 3 L. Roberts (G.S.G.B.); 4, W. Crockford (Petersfield). Fantails: 1, A. Marshall (J) (Basingstoke); 2 and 4, L. Roberts (G.S.G.B.); 3, D. Jackson (J) (Basingstoke). Veiltails: 1 and 4, A. Marshall (Basingstoke); 2 and 3, Green & Rudland (Reading). W.A.O.V.: 1, J. Jude (Gosport); 2, D. Stokes (Havant); 3, E. Binstead (Portsmouth); 4, A. Marshall (J) (Basingstoke). Breeders: 1 and 2, F. Pinder; 3, E. Webb (Bath); 4, Green & Rudland (Reading). Breeders: 1 and 3, P. Moye (Sudbury); 2, P. Newbury (Gosport); 4, D. Sheridan (Newpeet). X.O-S. Breeders: 1, I. Pierce (High Wycombe); 2, K. Hillier (Newbury); 3, A. Gibson (Reading); 4, J. Jackson (Basingstoke). X.T. Breeders: 1, M. Bishop (Bishops Cleve); 2, C. Morrison (Poet Talbot); 3, M. Bishop (Bishops Cleeve); 4, K. Usher. Marines: 1 and 2, A. Harmsworth (Basingstoke); 3, W. Harmsworth (Basingstoke). Plants: 1, M. Butcher (Trowbridge); 2, T. Duffy (Bracknell); 3, A. Weare (Southampton); 4, P. Merritt (Reading). Zb. Plants: 1, P. Merritt (Reading); 2, J. Jude (Gosport); 3 and 4, R. Shirley (Haslemere). Zc. Plants: 1, D. Stokes (Havant); 2, D. Langford (Haslemere). Novelty Snails: 1, M. Patrick (Trowbridge); 2, D. Eldridge; 3, E. Binstead (Portsmouth); 4, J. Jude (Gosport); A. Marshall (Basingstoke) won the Newbury Cup, the Groups closed trophy for the Junior with most points. I. Pierce (High Wycombe) took the Group's Breeding Achievement trophy, R. Canning (Newbury) won the highest pointed competitors' Shield, and the cup for highest pointed society went to Basingstoke. The show was visited by a large number of people from as wide an area as those that competed, including a coach from South Shields A.S., whose members spent the week-end with their "twinned" society, Basingstoke A.S.

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AT a recent inter-club table show between the home club, **Southampton A.S.**, and Gosport, the opportunity was taken to also hold an inter-club quiz. This was based on eighty slides of fishes, and Gosport won a keen contest. However, Southampton won the table show, which was for killies, pairs A.V., rasbora and A.V. livebearers. At previous meetings members have enjoyed the F.B.A.S. slide show on barbs, talks by B. Coombes on ponds and M. Strange on tropical fishkeeping. The club meets on the first Monday of each month at the Bitterne Park Hotel, Bitterne Park, Southampton, with an informal meeting in the middle of the month at members' homes. New members will be made very welcome and the secretary will be pleased to supply details. Please contact Mr. Don Mills, 30 Ferndene Way, Bitterne Park, Southampton.

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GUEST speaker at the September meeting of the **Stroud A.S.** was Mr. Mervyn Bishop of Bishops Cleeve. The annual table show was also decided the same evening. Results: Catfish: C. Whittaker. Cichlids: S. Amor. Platies: C. Whittaker. A.O.V.: Mr. Mctaggart. Swordtails: G. Tindell. Guppies: C. Cole. Gourami: L. Minchin. Mollies: Mr. McTaggart. Barbs: I. Willey. Sharks and Louches: T. Owen. Fighter: R. Amor. Best in Table Show: C. Whittaker, Catfish. T. Owens won the Breeders Points for variatus Platy.

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IN September the **Suffolk Aquarist and Pondkrepers Association** met to discuss the forthcoming show "Colourfish 75". Lessons to be learned from "Colourfish 74" were quickly absorbed and final arrangement decided upon. The main item of the evening was a very informative and interesting lecture by the club's show secretary V. Green, concerning the problems of live food ranging from catching daphnia to setting up cultures.

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THE September meeting of the **Taunton and District A.S.** was held as usual on the third Tuesday of the month at the British Rail Club room, Taunton. The usual table show took place, and the classes and results were: Characins R. & H.: 1, M. Bray; 2, 3 and 4, R. Hagley. Characins A.O.V.: 1 and 4, D. Curry; 2, Tratt; 3, Carol Vellacott. Labyrinths: 1 and 3 L. Pincombe; 2, Carol Vellacott; 4, S. Wallington. Fighters: 1 and 4, Carol Vellacott; 2, M. Tratt; 3, M. Bray. Included in the other business was a talk by A. Cavill on Livefoods, how to catch them and the benefits of each of the main types. The next meeting will be held at the usual venue, at 8 p.m.

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THE September meeting of the **Lincoln and District A.S.** commenced with a crossword puzzle. While this was taking place S. Hall of the Aireborough Club judged the fish for the Richard Baines Trophy. The winners were Mr. and Mrs. Calam, and they also took the second prize. Third place went to Mr. Plater and Mr. Stainer was fourth. There was a very good attendance at the meeting with 36 entries for the above trophy.

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IN June **Slough and District A.S.** gave a very successful display at Lent Rise School fete, which attracted much attention. In August R. Knight gave a talk and slide show on British Freshwater life. The September meeting was to have been a twelve a side and quiz with another club, but unfortunately they did not arrive. Also in September the society was able to have a special meeting at which Dr. E. Trewavas was the speaker, giving a very interesting and informative lecture and slide show on Malawi cichlids, which was attended by a number of visitors from other clubs. During that month the club visited London Zoo with a visit behind the scenes of the aquaria. Anyone interested in joining the club can come to any of the meetings which are held at the Friends Meeting House, Ragstone Road, Slough, on the third Wednesday of every month.

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COMMITTEE members elected at the annual general meeting of the **Grantham and District A.S.** were: Chairman, J. Jones; Secretary, W. E. Neville; Treasurer, M. Elsom; Open Show Secretary, W. E. Neville, 32 Sharpe Road, Grantham, Lincs NG31 9BW; Committee, M. Auckland, Mrs. S. Auckland, T. Gardiner, R. Wacey, Mrs. M. Wacey, C. Shipman.

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RESULTS of the **Grantham and District** open show were as follow: Platies: 1 and 3, Mr. and Mrs. Binley (Sheaf Valley); 2, Mr. and Mrs. Brett (Retford). Mollies: 1, Mr. and Mrs. Pennington (South Humberside); 2, Mr. and Mrs. Sellars (Lincoln); 3, G. & M. (Independent). Swordtails: 1, M. Rowe (Loughborough); 2, Mr. and Mrs. Roberts (Doncaster); 3, Mr. and Mrs. Sellars (Lincoln). Guppies: 1, Mr. and Mrs. Wacey (Grantham); 2, Mr. and Mrs. Chester (Retford); 3, Mr. and Mrs. Roberts (Doncaster) A.O.V. Livebearer: 1, Mr. and Mrs. Feasey (Doncaster); 2 and 3, A. Onslow (Loughborough). Small Characins: 1, R. Elliott (Corby) (Section Winner); 2, Mr. and Mrs. Roberts (Doncaster); 3, Mr. and Mrs. Chester (Retford). Large Characins: 1, Mr. and Mrs. Roberts (Doncaster); 2, Mr. and Mrs. Ottowell (Retfoed); 3, H. Bostock (Loughborough) Small Barbs: 1, R. Jordan (South Humberside); 2, Mr. and Mrs. Sellars (Lincoln); 3, S. Bamford (Independent). Large Barbs: 1 and 2, W. E. Neville (Grantham) (Section Winner); 3, Mr. and Mrs. Bull (Derby). Dwarf Cichlids: 1 and 3, Mr. and Mrs. Vernon (Retfoed); 2, Mr. and Mrs. Sellars (Lincoln). Large Cichlids: 1, Mr. and Mrs. Caldow (Scunthorpe Museum); 2 and 3, M. Armstrong (Grantham). Angels: 1 and 3, Mr. and Mrs. Sellars (Lincoln); 2, Mr. and Mrs. Caldow (Scunthorpe Museum). Rift Valley Cichlids: 1, Mr. and Mrs. Sellars (Lincoln) (Section Winner); 2, M. Armstrong (Grantham); 3, Mr. and Mrs. Brett (Retfoed). Corydoras: 1, Mr. and Mrs. Vernon (Retford); 2, G. & M. (Independent); 3, G. Lindsey (Loughborough). A.O.V. Catfish: 1, R. Frost (Grantham); 2, Mr. and Mrs. Binley (Sheaf Valley); 3, J. Smith (Chesterfield). Loaches: 1 and 2, Mr. and Mrs. Binns (Scunthorpe Museum) (Section Winner); 3, W. E. Neville (Grantham). Killiefish: 1 and 2, Mr. and Mrs. Brett (Retford); 3, Mr. and Mrs. Sellars (Lincoln). Minnows and Danios: 1, R. Elliott (Corby); 2, Mr. and Mrs. Michelthwaite (Retford); 3, Master S. White (Retford). Rasboras: 1, Mr. and Mrs. Chester (Retford) (Section Winner); 2, Mr. and Mrs. Roberts (Doncaster); 3, Mr. and Mrs. Feasey (Doncaster). Sharks: 1, R. Elliott (Corby) (Section Winner); 2, M. Rowe (Loughborough); 3, S. Bamford (Independent). Foxes: 1 and 2, Mr. and Mrs. Bull (Derby); 3, T. Sands (Boston). Fighters: 1, G. & M. (Independent) (Section Winner); 2, Master Ottowell (Retford); 3, Mr. and Mrs. Wacey (Grantham). A.O.V. Anabantid: 1, Mr. and Mrs. Chester (Retfoed) (Section Winner); 2, M. Armstrong (Grantham); 3, G. & M. (Independent). Breeders Livebearers (1-20): 1, W. E. Neville (Grantham; 2, Mr. and Mrs. Wacey (Grantham). Breeders Egglayers (1-10): 1, Mr. and Mrs. Sellars (Lincoln) (Section Winner); 2 and 3, Mr. Short (Sheaf Valley). Pairs Livebearers: 1, Mr. and Mrs. Feasey (Doncaster); 2, K. Prendergast (Boston). Pairs Egglayers: 1, Mr. and Mrs. Bull (Derby) (Section Winner); 2, Master S. White (Retford); 3, Mr. and Mrs. Binns (Scunthorpe Museum). A.O.V. Tropical: 1, Mr. Simpson (Queen of the Midlands); 2, Mr. Boothby (Queen of the Midlands); 3, Mr. and Mrs. Feasey (Doncaster). Novice Livebearer: 1, Mr. and Mrs. Auckland (Grantham); 2, Mr. Moore (Sheaf Valley); 3, J. Cavill (Doncaster). Novice Egglayer: 1, S. Ottowell (Retford); 2, T. Boulter (Grantham); 3, Mr. and Mrs. Auckland (Grantham). Goldfish and Comets: 1, Mr. and Mrs. Bull (Derby) (Best Fish in Show); 2, Mr. and Mrs. Rumbold (Boston); 3, S. Spittlehouse (Lincoln). Shubunkins and Fancy Goldfish: 1, Mr. Sheet (Sheaf Valley); 2, Mr. and Mrs. Wacey (Grantham); 3, C. Bailey (Grantham). A.O.V. Coldwater: 1 and 2, Mr. and Mrs. Feasey. Junior Livebearer: 1, J. Cavill (Doncaster); 2, S. Rowe (Independent); 3, R. Spittlehouse (Lincoln). Junior Egglayer: 1, S. Elliott (Corby Section winner); 2, S. Bostock (Loughborough); 3, S. Neville (Grantham). Best Fish in Show: Mr. and Mrs. Bull (Derby), Goldfish Comets.

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CONTRARY to rumour, the **Horsforth A.D.A.S.** open show on 30th November will definitely take place as arranged. Also the points scheme at the show will count for the award, although it was mentioned in the news letter that they would not. The last year's points were definitely sent in.

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THE open show of the **Goldfish Society of Great Britain** attracted a record number of entries and a large number of friends and members who arrived from all parts of the British Isles.

There were 232 fish put up for competition and while the fish were being judged, there was a lecture by R. Whittington about the Jikin, a Japanese goldfish which is really rare in the Western world. H. Berger then spoke on how he bred and raised Red Cap Orandas and Chocolate Orandas, and the problems with showing these fish. Finally, Al. Thomma, the well known American goldfish keeper, talked about goldfish genetics. Because of the high quality of the fish put up for competition, the eight judges spent quite a time deciding the best fish in show. They all agreed on a Bristol type Shubunkin belonging to G. King, who also won the gold pin. The trophies were presented by the member from America, Al. Tomma, and the results were as follow: Bristol (type) Shubunkin: 1, G. King; 2, J. E. Roberts; 3, G. Bell; 4, V. Cole. Veiltail: 1, D. E. King; 2, J. E. Roberts; 3, T. Halpin; 4, A. Marshall. Globe-Eye: 1 and 3, W. G. Cook; 2, Miss D. Morris. Bramblehead: 1,

A. Lawman; 2, R. Whittington; 3, D. Seymour; 4, L. Clements. Pearlscale: 1, 2 and 4, M. C. Close; 3, W. G. Cook. Celestial: 1, H. Berger. Pom-Pon: 1 and 2, Miss Berger; 3, A. Wright; 4, J. Bundell. Bubble-Eye: 1, 2 and 3, K. C. Speaks; 4, D. Seymour. Common Goldfish: 1, R. Cowley; 2, A. C. Law; 3, M. Meadows; 4, S. Herring. London Shubunkin: 1, 2 and 3, W. Leach; 4, Pam Whittington. Comet: 1, G. Marshall; 2, A. Marshall; 3, Miss D. Morris. Fantail: 1, A. Marshall; 2, D. Seymour; 3, S. Herring; 4, A. Lesurf. Oranda: 1, A. Lawman; 2 and 3, J. E. Roberts; 4, F. Hilton. Broadtail Moor: 1 and 4, A. Marshall; 2, H. Berger; 3, J. Kingsland. Results of Breeders: Bristol (type) Shubunkins: 1, 2 and 4, J. E. Roberts; 3, D. Cole. Veiltails: 1, 2 and 3, J. E. Roberts; 4, D. Mills. Bramblehead: 1, D. Seymour; 2, J. E. Parker. Pearlscales: 1, A. Lesurf; 2, 3 and 4, M. D. Close. Celestials: 1, J. Linale. Bubble-Eyes: 1, Miss D. Morris. London Shubunkins: 1 and 2, Pam Whittington; 3, W. Leach. Orandas: 1, 2 and 3, J. McNamara; 4, T. Halpin. Broadtail Moors: 1 and 2, J. Kingsland; 3, Miss D. Morris. Novice Class: 1, J. Amose; 2, A. Green; 3, R. Rudland; 4, F. Hilton.

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PHOTOGRAPHY was the subject of a talk at the August meeting of the **Bishops Cleeve A.S.** This was attended by 24 members. The September meeting was a very lively one. Members took part in a quiz which ended in a discussion and everyone had an enjoyable night.

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THE **Ashfield Fishkeepers Society** has a new secretary in F. Musgrove. The committee now reads: Chairman and Secretary, F. Musgrove; Treasurer, B. Emberson. The club meets on the second Tuesday in every month at: Potmakers Arms, Sutton-in-Ashfield.

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NEW SOCIETY

A new marine club has been formed in Lincoln called the **Lincoln and District Marine Aquarists Club**, and the following officers elected: P. Hammerton, Chairman; B. Edwards, Vice-Chairman/Outings Officer; Mrs. S. J. Edwards, Secretary; Mrs. M. Evans, Treasurer; D. Stainer, Press Officer. All marine enthusiasts are welcome to attend, and any enquiries should be sent to Mrs. S. Edwards, Secretary, 1 Whitehall Terrace, Lincoln. Tel.: Lincoln 33291 after 6 p.m.

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SECRETARY CHANGES

Harlow A.S.: P. Hynes, 16 Hollands Croft, Hunsdon, Herts. Tel.: Much Hadham 2419.

South Shields A.S.: Mrs. June Laydon, 10 Morpeth Drive, Moorside, Sunderland, Co. Durham. All club correspondence to this address.

South Humberside A.S.: R. Searby, Roberts Street, Grimsby, South Humberside.

Ashfield Fishkeepers Society: F. Musgrove, 40 Stuart Street, Sutton-in-Ashfield, Notts.

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SECRETARY CHANGE OF ADDRESS

Brighton and Southern A.S.: M. Rooney, 66 Portland Villas, Hove, Sussex, Brighton 411131.

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RETURN OF TROPHIES

Will the holder of the Colin Turner Cup for Best Platy awarded at the second Welsh national open show held on the 19th May, 1973, please return to: C. Turner, 146 Arran Street, Roath, Cardiff. Tel.: Cardiff 498982.

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AQUARIST CALENDER 1975

1st November: Lecture illustrated with slides by Mr. A. Lawman on his 1974 visit to the goldfish breeders of Japan. Venue is Friday Hill House, Simmonds Lane, Chingford E.4, and commences at 7 p.m., admission is free. Organised by Chingford and District A.S. and Walthamstow and District A.S. on behalf of the Essex, North and East London Aquarist Association. For further information please contact A. Chandler, 233 Forest Road, Leytonstone, London E11 1LE. Tel.: 01-539 3422.

2nd November: Blackburn Aquarist Waterlife Society Open Show, Windsor Hall, Blackburn. Details to T. Burton, 21 Henry Street, Rishton nr. Blackburn BB1 4JJ.

3rd November: Hartlepool A.S. annual open show, Longscar Hall, Seaton Carew. Schedules later from show secretary, M. Sheddon, 35 Spurn Walk, Hartlepool, Cleveland.

9th November: Halifax A.S. Open Show, Forest Cottage Community Centre, Cousin Lane, Illingworth, Halifax. Schedules from D. Shields, "Cobblestones", Gainest, King Cross, Halifax. Phone: Halifax 60116.

9th November: Glossop A.S. open show at Adult Education Centre, Talbot Street, Glossop, Derbyshire. Show secretary, Mr. S. Turner, 56 Arundel Street, Glossop. Tel.: Glossop 3409.

16th November: Bradford & District A.S. annual open show at the East Bowling Unity Club, Leicester Street, Wakefield Road, Bradford, 4 (same venue as last year). Details from show secretary, D. Sugden, c/o 18, Southmere Crescent, Great Horton, Bradford BD7 3NP.

16th November: Walthamstow and District A.S. open show, Sunday, at Mission Grove Annexe, Warner Road, Walthamstow, E.17. Open to public at 3 p.m. Schedules from A. Chandler, 233 Forest Road, Leytonstone, London E11 1LE. Tel.: 01-539 3422.

22nd November: Fur, Feather & Aquaria Show, King's Hall, 39 Lower Clapton Road, E.5. Schedules and further details from show secretary, Sybil Hedges, "Koi Kornor", 150 Ashburton Avenue, Seven Kings, Ilford, Essex IG3 9EL. Tel.: 01-590 3239.

22nd November: Goldfish Society of Great Britain, Conway Hall, Red Lion Square, Holborn, London, W.C.1.

30th November: Horsforth A.S. open show at the New Civic Hall, Bradford Road, Pudsey. Show secretary, C. Coens, 15 Thorndeigh Grove, Leeds LS9 8QR, Yorks.

6th December: Federation of British Aquatic Societies Annual General Meeting, Conway Hall, Red Lion Square, Holborn, London, W.C.1. 2.30 p.m.

1976

11th April: Taunton A.S. annual open show.

22nd May: Merthyr A.S. open show.

4th July: Grantham and District A.S. seventh annual open show.

28th August: The third Welsh National open show to be held at the Sophia Gardens Pavilion, Cardiff. Further details available from: C. Turner, 146 Arran Street, Roath, Cardiff. Tel.: Cardiff 498982. M. Guthrie, 4 Nurston Close, Rhoose, Glamorgan. Tel.: Rhoose 710649.

12th September: Harlow A.S. open show.

ALADDIN'S CAVE IN OXFORD

—Where the gems were tropical fish!

by M. C. Tan of Singapore

A corner of the wholesale warehouse sale area

My ambition to visit The Goldfish Bowl in Oxford was the result of a meeting with the proprietor, Max Gibbs, during one of his visits to my native Singapore. At the time of that meeting several years ago, I listened to the ideas and intentions that Max had in mind regarding his approach to the fish business and like my companions, only one of whom was in the business, I was impressed by the substance of what was revealed during our discussion that long evening. Now I was in Oxford at the wholesale warehouse and able to see those ideas in operation.

The ground floor of the lengthy warehouse is roughly divided into two halves. The back section is designated specifically for the inevitable quarantine programme which all the freshwater tropical fish pass through. The front section housed tens of thousands of impressively healthy looking fish in sparkling clean tanks. Along one wall were many marine fishes including some very familiar to me as being native to Singapore waters. However, most of the marines were imported regularly from Sri Lanka and The Philippines I learned. The rest of the sales area was clearly defined in sections holding Characins and Catfish in one row, other rows being allocated to Livebearers (excepting Guppies), Loaches, Labyrinths, Barbs, Neon and Cardinal Tetras, Angel fish varieties, Guppy varieties, other unclassified varieties, and racks holding jars of Male Bettas.

The tanks of the quarantine area were used fully and in some cases fish were still under observation following a troublesome history since their arrival as imports several weeks previously. However, it was explained to me that only relatively few lots proved to be such a problem and prophylactic treatments on a routine basis usually cleared the new arrivals through to sales within about eight to ten days. About ten drugs and preparations seemed to form the basic "medicine chest" in use although new ideas and techniques were constantly under review. One problem commonly troubling Singapore Platy and Swordtail stocks which I had been shown the previous week in Germany was being seriously tackled here in Oxford and the encouraging measure of success contrasted with the approach experienced in Germany. There the attitude was entirely negative and the solution was simply to sell the fish out again in a diseased condition.

Above the quarantine area on the first floor I found a room racked out with fibre glass bins where the weekly intake of aquatic plants was stored. These mostly came from Singapore and I was already aware that a plant grower back home was well aware of the high standard expected of him by The Goldfish Bowl. Some plants came from Thailand and English growers also.

In the general office I found that deliveries by the firm's vans went to such distant places as Blackpool every fortnight, Derbyshire and area every fortnight, South Wales as far as Swansea every week, Northampton/Bedfordshire and area every week, Gloucestershire and Birmingham areas every fortnight. Less accessible places were served by rail and air besides quite a few traders calling for their requirements personally.

Outside the tropical building I was shown a huge pile of coral sand which is specially shipped from The Philippines. Its desirable feature is the fact that it is "algal oolite" bearing and is an unbeatable bottom medium for biological sub-gravel filtered marine aquaria. The Goldfish Bowl introduced this commodity to the British hobbyist seven years ago since when some hundreds of tons have been distributed throughout the country for use in marine aquaria.

Also outside I saw some very beautiful fancy goldfish which outclassed the general standard of the same varieties available at home in Singapore. This stock in Oxford was almost entirely from Peking and I was told that it had been outstandingly trouble-free. This goldfish area was scheduled for enlargement and further developments for increasing the range of coldwater fish in 1976 were being planned.

Apart from supplying many retail shops throughout Britain this impressive warehouse also supplies stock to the two retail shops owned by the firm in Oxford and Reading. Leaving the Goldfish Bowl (Wholesale), Magdalen Road, Oxford, I was taken to see the two shops and I will tell you about these next month.