

AUGUST 1972

15p

Pet Fish

monthly

The PRACTICAL FISHKEEPING MAGAZINE



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A Large Lounge Aquarium

Breeding Killifish

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Comments and Quotes

● Dose repetitions, shot-gun treatment and 'kill or cure'

Medicaments Misused

IT was once not uncommon to read in books and articles the advice to aquarium-keepers to add a weekly 'pinch' of Epsom salts to their fish tanks (size of the containers apparently of no relevance to the advice). We do not recall ever seeing any explicit statement about what such additions were supposed to achieve, and it is to be suspected that the manoeuvre was more in the nature of an offering to the gods or a talisman against disaster. What such advice did disclose, however, was complete unawareness of the need to consider what happens ultimately to any substance added to the water of an aquarium. How different things are today—or are they?

On looking at the vast array of poisons in various forms now on sale for almost every kind of aquatic mishap, the same unawareness as that mentioned above appears to be present in several of the sets of directions for use of the preparations. The impression is too often given that regular additions of this or that can do nothing but good for the aquarium. For some substances, ones that break down or are broken down to simple natural residues, this might be true. For others, including most of the inorganic salts, it is not at all true. What happens with the latter group is that the compounds accumulate in the aquarium. If such compounds are to be applied in the form of regular doses then the only way of ensuring that the ultimate accumulation is not itself a cause of trouble is to change some of the tank water regularly. This advice rarely if ever appears as part of the instructions accompanying aquarium 'tonics' and remedies.

Other misuses of aquarium additives that we suspect to be all too common are the shot-gun technique

and the kill-or-cure approach. With the first a whole barrage of remedies is applied, if not precisely all at the same time in such quick succession that if the disease doesn't kill the fish the therapeutic blasting it gets will certainly do so. Here again, the required advice to give a change of water after one remedy has been used, before trying any other, is usually not given. The kill-or-cure brigade administer their *coup de grâce* by a deliberate bludgeoning overdose. Not, we think, the rational approach to aquarium therapeutics.

It should, of course, be axiomatic that remedies should not be used at all unless the need to use one exists, and that the remedy used should be relevant to treatment of that need. To see signs of white spot disease on fishes and then to add a fungus cure to the tank simply because that happened to be the only remedy available at a pet shop might appear to be an outlandish way of going on, but it has happened! Truth is ever stranger than fiction. There was once a miserly lord who forced his manservant to consume all the left-over pills and medicines about the house so that these would not be 'wasted'. Aquarists who subject their fishes to similar treatment usually do so not from miserliness but through being over-anxious about their charges. It needs to be remembered, however, that risks from treatment sometimes exceed disease risks.

DESPITE the attempts we have made to absorb increases in costs of printing, paper and distribution, occurring over the 3 years in which the price of *PET* has remained unchanged, it is now necessary for our price to be raised to 20p. The alteration of price will take effect with our next issue, dated September.



Your comments and views on all topics of interest to aquarists are welcomed. Address letters to PFM Letters, 554 Garratt Lane London SW17 0NY

Do Aquarists Want Their Hobby 'On the Cheap'?

WITH regard to Mr Elvins' letter on the cost of aquarium accessories, fishes, plants etc. (PFM, June), I felt I had to write to your Letters columns. I am a keen model-maker and photographer and can assure Mr Elvins that the increases in these two hobbies far outweigh that of aquarium items. For example, about 7 years ago the cheapest plastic model kit by a well-known English firm was 15p (then 3/-); this now costs 22½p and other kits that cost 30p now cost 55p. In photography, a well-known German camera 8 years ago cost £59—the same camera today will cost £101; colour films 5 years ago were £1.40, and today £1.98.

I work in an engineering firm where during my lunch hour I can make angle-iron frames for myself. For a 36 in. by 15 in. by 15 in. frame I need two lengths of angle iron at a cost of £1.40; the glass needed, approximately 12 sq. ft. at 15p per sq. ft., costs £1.80. I then need putty (35p) and one tube of silicone sealer (95p). If I buy a 36 in. by 15 in. by 15 in. siliconed tank from my dealer it costs me £6. Is £1.65 a big saving for me or a large profit for the manufacturers' and dealer's time?

When one can buy adult neons at 17½p, cardinals at 40p and zebra danios at 10p, is this a lot of money to pay for a thing of beauty in the home? The average neon at 17½p will live for 2 or 3 years; a packet of cigarettes at 25p will last an evening.

JAMES DUNBAR

Belfast BT6 8NF, N. Ireland

YOUR recent contributor who complained of the 'high prices' charged by British aquatic shopkeepers is less than fair. I started in the hobby nearly 10 years ago: I clearly remember paying the equivalent of 15p each for red platys and for yellow wagtail platys; the same fish today, of good quality, in my local shop (Don Henry Ltd), are 17½p-22p; line-bred stock come a little dearer but are worth the extra.

Recently I have been in Germany, Holland and Sweden on business and took the opportunity to compare prices. Generally, for tropical fish, prices in each of those countries were 50% to 100% higher than in Britain. This is partly explained in Sweden by the fact that Value Added Tax is high (17½%). However, this does not explain the high prices of fish in Holland. The following were noted in The Hague: neons 37½p each; lyretail mollies 50p; cardinals 60p; pulchers 40p; rosaceus 50p; kribensis 60p (small size).

Equipment such as pumps, tanks and filters were all considerably dearer. The fact of the matter is that the aquarist in Britain wants his hobby on the cheap—I like to compare this hobby with photography: a keen amateur photographer would

happily pay £100 for a good camera. How many aquarists pay anything like that for a complete set-up? No, our hobby is served by many fair traders. Of course, there are some who are better than others but overall we hobbyists fare very well indeed.

Enfield, Middlesex

'vorn'

REGARDING Mr Elvins' letter and your Editorial (PFM, June) it is fair to remember that over a period of years retailers have, it would appear, gone out of their way to create public distrust. The government's viewpoint on the rampant inflation is over-simplified and also self-righteous (the influence of the inland revenue and the tenuous situation resulting from taxation methods is never mentioned). However, to get to my point, namely quoting prices: immediately before decimalisation, back bacon cost 6/- per pound in a multiple and 8/9d per lb in my local grocers. John West tinned kippers cost 3/7d per tin in a local multiple and 3/3d per tin in the north of Scotland (transport costs?). Potatoes (5 lbs., whites) cost 50p in Woolworths and 160p in a greengrocers a little farther along the road.

An ill-made 24 in. by 12 in. by 15 in. aquarium cost £5.50 in a local shop and a properly made one £4.50 in Glasgow. A plastic aquarium cost £5.50 in Glasgow (carry it home) and £5.18 in Sheffield (delivery anywhere in the British Isles free). A

Continued on page 161

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LETTERS

continued from page 154

super-twin filter cost £1.65 locally and direct from the manufacturers, but £1.48 in Sheffield (no delivery charge). Airline prices range from less than 1p to 2p per foot. Goldfish with peculiar shapes—acroplane tails, for instance—no longer appear in the throw-out tank and cost 37½p for 1½ in. fish.

What was once a schoolboy's hobby enjoyed by grown-ups is now business, with a vengeance sometimes.

Greenock, PA16 0RS

W. F. CLARK

IN connection with the letter in the June issue of *PET* 'Expense in the Hobby', Mr Elvins should find a new dealer! For a start, it should be possible to plant a 15-gallon aquarium with the plants mentioned for £1.50; after all, does he want a jungle? Plants do multiply. As for 35-40p for a male guppy, I would pay treble that: after all, some dedicated person has spent years perfecting the beauties we see today. If cheap fish are wanted, either buy one pair (they soon breed) or buy cheaper fish, of which there are many varieties. A community of livebearers will multiply at an alarming rate and provide plenty of interest for the children. As for prices rising, I bought a shark, *Labeo bicolor*, 4 years ago for 85p and the dealer still has them at the same size and price.

To me, every penny is well spent. After all, you do not restock an aquarium again for years. I have one stocked when I began in the hobby nearly 4 years ago and it is still thriving and there are no livebearers. Besides the pleasure of my fish, I have now many more friends made at the local aquarist society.

Redbourn, Herts.

(MRS) SHEILA HEYS

Class HPF?

THE recently formed United Aquarist Society will be holding an open air furnished aquaria competition on Sunday, 27th August at the Hollow Ponds, Whipps Cross, Leyton, London E.10 around 2.00 p.m. Entries will be restricted to classes HPF (hollow ponds furnished) and HPA (hollow ponds aquascape). Competitors will bring only tanks and tools—everything else, including gravel, plants, discus (!) etc. will be borrowed from the natural resources in the area, within the allotted time of 2 hours. Scuba diving gear will be

allowed but any competitor found using a bathyscope, mini-sub or stingray will be disqualified.

All our members will be there with their families, enjoying the vast picnicking area available. The public will be asked to judge the exhibits and we hope, in this way, to promote public interest in aquatic life in general, furnished aquaria in particular, whilst at the same time, with the aid of posters and by returning all the items collected to the ponds, to encourage the public to join the fight against pollution and preserve their natural environment.

In a lighter vein, we would be very pleased if aquarists from other clubs would turn up to give moral support, cheer, boo, advise or perhaps even learn a thing or two.

161 Church Leys,
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B. SALSBURY
Secretary,
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You Cannot Better Nature

A GROSS swollen body; gaarled, cancerous tumours engulfing the head; parts of the body absent causing instability; inbred weakness to disease; areas of the body extended until they are useless. No, that is not some grim warning of the future. It isn't the result of a fecund mind foreseeing a grisly destiny. It is a simple and accurate description of a fish! A mutant creature: a strain of fancy goldfish, useless to itself, deformed and crippled but praised by man, created by man. The grotesque, inflated bodies of fancy goldfish 'grace' the tanks and ponds of hundreds, thousands, of devoted aquarists. But the tropical fish enthusiast is not innocent. Far from it.

Look again at the man-made monstrosities inhabiting the tropical freshwater aquarium. Thin, black angel fish with extended fins, glowing guppies formed into the most ridiculous of shapes, orange swordtails with ludicrous, pointed fins and Siamese fighting fish, large, round and iridescent—but wrong.

What is this strange, perverted craving for altering living creatures, to mould them into new shapes? From one look at some of the hideous creations already made, isn't it obvious that man cannot improve on Nature? You need only look at the colours and sizes of most wild tropical fishes to see that the aquarium-bred specimens are but dull, misshapen copies of the original. If only wild-caught fish were now sold in the shops, I believe that by their side, even the incredible colours of the coral fishes would seem a little less intense than they at present do. The terrible thing is that the official show standards encourage the mutant fish. Take a look at the standard Siamese fighting fish—that slender body, the fins that should form a circle. There is the tale about the breeder who feeds her fighters only one tubifex

worm a day, to achieve the slender body required. Whether or not this person exists, I cannot say, but the fact that such a shape is required as ideal must surely be wrong.

And still new mutants are leaving what I can only call 'the production line'. Some of the less serious cichlid breeders are only too happy to interbreed different types of fish haphazardly. Lake Malawi cichlids of no particular species come in just about every hue imaginable. There

are, of course, the more scrupulous breeders who will not allow such creatures to be born. I have recently read of a new strain of angel fish which some person intends to create from a single deviation. This has three dorsal fins and is to be called the Trident. How sick can you get?

HUW COLLINGBOURNE

Rhondda, Glam. CF43 3LR

A Killifish for the Beginner

By ANTHONY MATTHIAS



ONE of the best known of all killifishes and perhaps the easiest to spawn for beginners is *Aphyosemion australe*. It spawns either as a top spawner on nylon mops or as a bottom or switch spawner over peat.

To breed this killie first select a trio, two females and one male, and condition them with live foods, as with other kinds of fishes. Fill a 12 in. by 6 in. by 6 in. tank with aged water of pH 6.8 (slightly acid); soft water is preferred but is not essential.

For the top-spawning method make a mop from nylon strands knotted together and hang it from a block of polystyrene to make it float. Put the conditioned fish into the tank with the mop and feed them daily with live foods only. Siphon off any uneaten food, as this could affect the eggs. Try to vary the food as much as possible, e.g. daphnia one day, tubifex the next, then white worm and back to daphnia. Some fish will eat dried food but it must be given sparingly.

After 1 week remove the mop and squeeze it dry. Eggs should be found all over it, but if not, put it back and check again after a further week as sometimes the fish take time to settle down. When the eggs can be seen, pick them off with the fingers. They are quite tough—the only ones that will burst are unfertilised anyway.

Put a half inch of water in a small

plastic sandwich box and touch the water with the eggs on your finger; the eggs will then sink to the bottom. Add two or three drops of Disasolve and store in a darkish place at 70°–72°F (21–22°C). After about 6 days check the eggs. They should start to 'eye up', which means the shape of the fish should be seen inside the eggs; their most notable feature is the eyes.

The eggs usually hatch 12–14 days from spawning and if collected regularly will hatch over 3 or 4 days. Care must be taken that the first to hatch do not eat the others. If by 21 days the eggs are 'eyed-up' and still not hatching, put a small amount of micro worm into the water; also add Infusoria, as the fry eat food almost immediately.

The fry must be fed 'little and often', i.e. there must be food in the container all the time since they eat almost non-stop, but take care not to foul the water. Day-old brine shrimp and Infusoria will be needed for the first week, then brine shrimp and micro worm for a further week. During this period gradually top up the container.

After this has been done a 12 in. by 6 in. by 6 in. tank with about 1 inch of aged water about 72°F (22°C) will be needed. Gently pour the fry into it from the plastic container. Over the next 4 weeks gradually top up the tank. This size of tank will easily raise up to 20

fish. By this time they will be sexed out and ready to use for spawning. At 3 weeks old fry will eat Grindal worm. Dust-fine dry food can be tried if they will eat it and also sieved daphnia. At 4 weeks the fry can be fed on daphnia, chopped white worm and tubifex. If they have eaten dried food, occasional feeds of any flaked food can be tried. At 6 weeks old fry are sexed out and ready for spawning.

The bottom or switch-spawning method is perhaps the better one to use as the eggs usually all hatch at once. For this you will need a 12 in. by 6 in. by 6 in. tank with a ½ in. layer of prepared peat fibre. This must be boiled and then well rinsed. Fill the tank to a depth of about 3 in. with water and add the peat. The trio of fish can be left in for 2 weeks, with care not to over-feed. Then remove the trio. Pour the peat and water through a fine net. Squeeze the peat nearly dry, put it into an airtight polythene bag and store for about 4 weeks.

A 12 in. by 6 in. by 6 in. tank with ½ in. of aged water is next set up. Put the peat in and fry should hatch within 2 hours. Add Infusoria to help with hatching. Feed as in the previous method described above and top up the tank gradually. Provided that no fouling of the peat takes place the fry will spawn in it in due course. So dry it out again and hatch some more!

PAT & DEREK LAMBOURNE describe their success with an

Armoured Catfish Spawning



AFTER searching the shops for a very long time for true *Callichthys callichthys*, we finally bought two young fish in July, 1971. (This was after spending many hours and travelling many miles for fish that were listed as *Callichthys callichthys* but which turned out to be *Hoplosternum thoracatum*.)

As these fish were very small when we bought them we were not absolutely sure that they were a pair, but as they were too young to sex we took a chance. As they began to grow we could see that our choice had been a good one. The way to

dropped the depth of water to about 8 in. Over the next few days we lowered the temperature in the tank to 72°F (22°C), and floated a plastic lid on the top of the water. We then turned on the power filter so that it sprayed across the top of the water.

One of the males began to investigate the lid and encouraged the female to do so, but she didn't seem interested. That evening, the male began to build a bubble nest, which consisted of very large bubbles, beneath the lid. The female then became interested and began to help the male. All filtration was then turned off in the tank.



Photographs
by
**CLIFF
HARRISON**

One of the *Callichthys callichthys* parents (the male) from which the authors obtained their unusual breeding success

distinguish between male and female is quite easy once the fish starts to grow. The male has a very thick and hard first ray on the pectoral fin which is a reddish orange colour, and the female does not. A few months later we managed to buy another *Callichthys callichthys*, which grew into a very fine male.

We now had two males and one female, and as we could not obtain any more females decided to try breeding with the ones we had. The three fish were put into a 36 in. by 15 in. by 15 in. tank and fed on maggots, chopped earthworms, mealworms and peas to try and bring them into breeding condition. We left them for a couple of weeks, feeding them as often as they would eat. One male seemed to be very interested in the female so we

Next morning the nest had pushed the lid right out of the water and the bubbles in the nest were much smaller. After a few hours we noticed that the eggs had been deposited in the nest and there seemed to be between 50 and 60 of them. These eggs were an amber colour. After 2 days the eggs were 'eyed up' and everything looked fine. On the third morning there seemed to be activity round the lid and when we looked—the eggs had been eaten!

Well—we wouldn't admit defeat. The tank was filled up again and the fish left for a month, being fed as before to condition them and enable the female to fill with roe again. Four weeks to the day we lowered the water and the temperature, and the fish obliged again. The second nest was much

larger, but when the eggs were laid they were much paler. This time the lid was removed and the eggs were put into a large container with water taken from the tank, to which we added one drop of methylene blue solution. This container was then floated in the tank.

During the next 3 days we started the brine shrimp going so that as soon as the fry were free-swimming their food would be ready. On the third day the eggs began to hatch and in the 74 eggs only six developed fungus. When the fry were free-swimming they were transferred to a small tank with a water depth of about 3 in.

The fry are now 10 days old and swimming strongly. Although the fish are only about $\frac{1}{2}$ in. long at this time their 'whiskers' are clearly



Part of a group of the young armoured catfish described in the article, photographed when they had reached about $\frac{1}{2}$ inch overall length.

visible, and on such a small fish this looks very odd.

Hints on the Aquarium Care of British Marine Fishes and 'Inverts.'

FOR British marines, an old angle-iron tank is ideal. Do not keep too many animals, and as to community conditions one merely remembers that 'a big one will generally be willing to eat a little one'. Use hard rocks as decoration over coarse sand and pebbles. Have a stand-by quantity of water in case of accident or possible pollution. Provided that the tank is not allowed to become overstocked or the temperature to rise above 50°F (10°C) there will be no need for aeration, and, additionally, if care is taken over the feeding there will be no need for filtration. The tank should not be placed in a well-lit situation; even for observation and decorative purposes a subdued light should be used.

Do not feed more often than once each day and even then the animals must have only tiny meals; twice a week is ample, especially in cooler weather. Most of the animals likely to be kept can go a week without food before making serious attacks on their companions; many (starfishes and crustaceans) will thrive best on fortnightly meals. Foods provided should be those which the animals could obtain under natural conditions, if this is at all

possible. In fact, where it is not always possible to do this regularly then some special efforts should be made occasionally to provide natural foods. Of greatest importance is the flesh of mussels, because every one of the littoral animals will welcome this; the mussels can be kept alive for up to a week in a glass jar, without water, so long as the temperature of the jar is maintained at about 40°F (4°C). Other well-liked foods include shrimps and prawns (live, or boiled and cut up), sandhoppers, small marine worms, many other shellfish (cockles, limpets, winkles of all species), the flesh of the common shore crab and similar larger crustaceans.

Inland aquarists, denied the use of the foregoing as regular foods, should use the flesh of fish like cod and whiting; never use oily fishes

such as herring. In addition one can provide earthworm, woodlice, freshwater shrimps, daphnia and raw lean meat (beef primarily, because mutton and pork are often too fatty). It is best to let the newly introduced animals settle down on a diet of natural foods before trying them on earthworm and beef.

Any animal 'playing' with its food should have the food taken away; crabs are apt to do this, shredding up the food and making a mess of the tank. All uneaten foods must be removed; waste of this nature can very quickly foul the water.

Considerable attention must be paid to the temperature: animals that are very largely confined to the lower shore or are taken from the shallows should be kept always at a low temperature range. pH and salinity are of less importance than temperature.

This species is not particularly difficult to keep in good condition in the aquarium; the addition of one or two teaspoonfuls of sea salt per 2 gallons of water is recommended. A temperature of between 72 and 78°F (22-26°C) is quite suitable but the fish should be given fairly roomy tanks if their growth is not to be stunted. It must be remembered that *N. nandus* is a predator and will certainly not be happy on a diet of tubifex worms alone. Larger foods are required and small fishes will be eaten if they are obtainable. The capacity of its mouth can be seen as it spits out a large morsel of food—the mouth can be stretched and extended and a fish up to half its own size can be ingested because

of it. Not that it is very easy to observe it eating another fish.

It has a great turn of speed when frightened (though it is not a nervous fish) but if the fish is aware that it is being watched it is distracted from the task in hand of catching its prey. Like *P. scalare* it may react to unfavourable conditions by closing up its fins and possibly by a darkening of its colours. If the fish are displaying such symptoms I would recommend a partial water change and the addition of the sea salt mentioned above.

Reports have not yet been made of the breeding of this fish in aquaria but there must surely be a good chance that this will be achieved.

Readers' Queries Answered



Ultraviolet Light

Could you tell me if I change my Gro-Lux lamp and replace it with an ultraviolet one, whether it will be beneficial for my fish with regard to eliminating disease? A writer in an American publication has said that since installing such a lamp he has had no loss of fish, no disease, no tank contamination and no cloudiness of water. Your suggestions would be of great help to a newcomer to fishkeeping.

Although there is no doubt of the sterilising capabilities of ultraviolet light, u.v. irradiation is most suitable for application to the quarantine tank, i.e. a bare aquarium with water and fish only. Assuming that you are experiencing losses through disease, our advice for a set-up tank would be to seek assistance to identify what disease is present and then to apply the appropriate remedy. Once a tank is free from disease great care must be taken not to introduce new fish that have not been quarantined. Cloudy water is a sign of bad tank maintenance and to use ultraviolet to clear that would be very bad technique and an example of nut-cracking by the use of steam-rollers!

Not a Cross-Breeding

I have recently heard of a spawning between two different species of

cichlids, although the eggs have developed fungus. Is it likely that eggs will hatch another time?

For spawning to be taken as evidence of cross-breeding it must result in the hatching of live fry. The eggs laid by a female fish that subsequently develop fungus have probably not been fertilised by the male, however closely he gives the appearance of having done so, because his sperms are incapable of fertilising the eggs. The two fishes may be exhibiting breeding behaviour but they are not achieving a cross-breeding.

Unexplained Losses

In the main my fish thrive but I have lost 12 harlequins and 12 neons at intervals of about 24 hr. There were no external visible signs of disease and they were dead within 2 hours from appearing quite lively. The distress symptoms appeared suddenly by weak swimming and finally desperate darts until they died. I have since put this down to too high a temperature, which was about 78-80°F. It is now 72-75°F. Water is from the tap, natural pH 8.5; I add sodium bisulphate to lower this to 6.8 approximately.

There is a query here about the water you are using. It appears to be soft and yet has a high pH, requiring

correction. We wonder how much bisulphate you are finding it necessary to add, as sulphates can be poisonous. We would prefer to use acid phosphate or phosphoric acid. Possibly the fishes found the water conditions uncongenial for them, but in the absence of any marked symptoms it is not possible to state the reason for their deaths. It is very unlikely to have been the temperature at 78-80°F, but to hazard a further opinion it would be necessary to know whether any member of the tank survived despite the deaths of the neons and harlequins; or indeed whether the latter were new arrivals or were fish that had already settled into the tank and then died.

Gill Flukes?

Can you please help me solve a problem that has already cost the life of a red-tailed black shark that cost me a £1.00 of my house-keeping money. Over the past few months my fish are dashing themselves to bits on rocks, heaters etc. because of some irritation. I have treated them for white spot although I could not see any spots on them and I have cleaned out the tank and bathed the fish in salt. But still they continue to dash about.

The symptoms that these fish are exhibiting correspond closely to those of fish troubled with gill flukes. These are small parasites lodging in the gills and elsewhere and the irritation they cause can make infested fish dash about their tank. Acriflavine is an effective chemical agent against these parasites. Neutral acriflavine can be purchased from a pharmaceutical chemist in the form of tablets and used in the strength of 1 tablet (1.75 grains or 0.113 gram) per 20 gallons of water. The

subjects are orange-coloured and should be dissolved in a small volume of water before this is poured with stirring into the tank. The chemical should be left in the water for 3 to 4 days and then half the water changed; the change should then be repeated after 3 more days. Some plants may be affected by this chemical but the majority will not show ill-effects if it is used over such a short period.

Decorative Lighting

For decorative reasons I am proposing to light my tank in future by two small spotlights about 18 in. to 22 in. above the tank, which is glass covered. My tank is 15 in. deep. Will my plants receive enough light? I shall use 100 W lamps and a Gro-lux tube close to the top of the tank is the best.

The adequacy of this method of lighting for plant growth will depend on the spread of light that reaches the tank. The tank length is not given here, but 30 in. would probably be the maximum length that could adequately be illuminated by two spotlights at this height. The success of the system will almost certainly depend on the use of the additional Gro-lux tube.

Hatching Angel Eggs

Recently my two angel fish that have been in the community tank for a year started to breed. The results of two spawnings were eaten by the parents. A further two spawnings, when I removed the parents, have resulted in fungus on the eggs. Can you please give me the correct procedure for a successful hatching?

You do not describe where the parents are laying the eggs, but if it is not on a broad-leaved plant then group up a piece of glass, slate or vitrolite in the spawning tank. The procedure is to remove the eggs, not the parents. The eggs should be taken out of the tank on the leaf or the piece of glass and removed to another tank containing some 6 inches depth of water (or as much as will cover the eggs when the glass or leaf is arranged upright in the tank) identical with that in the breeding tank and at the same temperature (80-82°F). To this water should already have been added five drops of a 5% solution of methylene blue per gallon. This will help to stop fungus developing on the eggs. Finally, to simulate the

fanning that the parent angels would subject the eggs to, a weak stream of bubbles from a diffuser stone should be allowed to pass upwards just beside the eggs, though not touching them, to keep the water circulating around them. The eggs should hatch in 2-3 days. First food should take the form of newly hatched brine shrimp.

Livebearer Breeding

I am new to keeping tropical fish and your advice on breeding Heterandria formosa and Limia nigrofasciata would be appreciated. The mosquito (three females and a male) are in an 18 in. by 12 in. x 12 in. tank with four White Clouds and eight young guppies. I hope to get the pH down to 7.0 and the tank is lightly planted with Hygrophila and Elodea. The Limia (two females and one male) are in a community tank with tetras and barbs and I intend to house the females in a breeding trap.

Mosquito fish breed every 4 or 5 weeks and are unusual in taking a week or 10 days to drop their young, a couple a day, so you will get up to about 20 young with each spawning. It is unusual for mosquito parents to eat their fry, but these are very small and even though the other fishes are guppies and White Cloud minnows they will investigate the fry as possible daphnia and a few fry may get gobbled up. However, a good layer of Riccia on the surface of the water will enable most of the young to survive. If, of course, you wish to breed these fish for re-sale so that every one is required, then it will be necessary to house the mosquitos in a separate tank.

This also applies to the Limia, but it will be necessary in any case to use a breeding trap to separate the females from their young to prevent their eating them; the trap must be of the variety where the fry cannot get back into the compartment housing the females. Female Limia nigrofasciata give birth to comparatively few young at a time, and they are a little bit deceptive, in the same way that mollies often are, in looking as if they are ready to drop their young when they are not at all. They must fill out until they are really square-looking underneath when viewed head-on. Again, a layer of Riccia on the tank surface will give the fry a chance if you should misjudge the time to put the females in the breeding trap.

Water Snails

I have become very interested in the snails in my tanks—I have five different types—and am anxious to understand more about these creatures, e.g. why do the red ones breed furiously yet the white ones seem sterile? Are these snails male and female or unisex etc.? Can you suggest a book on the subject?

Most freshwater snails are bisexual or hermaphroditic, each snail having both male and female reproductive organs; they are not necessarily self-fertilising although some can fertilise their own eggs. It is more usual for cross-fertilisation to take place. Red ramshorn snails are very prolific breeders and it is likely that conditions in your tank are just right for them so that they are thriving. Books to be recommended are: BRITISH SNAILS by A. E. Ellis, Oxford University Press, 1969; ANNUAL LIFE IN FRESH WATER by Helen Mellanby, Methuen. There is also a descriptive chapter on snails in ALL ABOUT TROPICAL FISH by D. McInerney (Harrap).

Unwanted Scuttlers

My small tank holding 23 baby guppies is infested with small insects, about the size of Daphnia. I noticed these about a month after the tank was set up, running across the bottom gravel and swimming quite quickly around the tank. The fish did not eat them and they multiplied very quickly so I cleaned out the tank. After a few weeks they returned and this time I stripped the tank, cleaned the plants, boiled and baked the stones and filtered the water. But they have returned again. Under the microscope they are smooth on the top side with very tiny legs. I have used only a top-quality flake food and have recently cut down on this although I cannot believe this to be the cause. Can you help?

The small crustaceans you have seen in your tank are almost certainly the ones known as Cypris. They are not parasites and are in fact quite harmless. Their presence in number does mean that there is abundant food for them coming from somewhere and if it is not excess of food put in for the fishes it could be decaying water plants. They will almost certainly decrease considerably in numbers or disappear altogether when their food supply lessens.

A Lounge Aquarium Made from Wood and Fibre Glass

By P. HAYWARD

(Gosport & District Aquarist Society)

THE decision to build a jumbo aquarium came about when I was designing the lay-out of my large lounge. I had a great deal of space to play with, and wanted something as an alternative to the television for myself and my family to watch during leisure hours.

It was not long before I realised that the cost of a ready-made aquarium was for me prohibitive. I had to find a way of making one myself. As viewing would only be from the front, and the whole thing would be contained in a large wooden cabinet, glass could be eliminated, except for the front. I decided that 1 in.-thick blockboard would be strong enough, reinforced, and waterproofed with polyester resin and glass-fibre mat.

Having decided the dimensions (7 ft. long, 2 ft. 6 in. high, 2 ft. deep), I cut and assembled the

blockboard. Simple butt joints were used, well screwed and glued all round.

At this point I was advised that my wooden glass-fibre 'crate' would probably not be strong enough for the colossal quantity of water involved (over 200 gallons). I decided to reinforce it with 2-inch angle-iron. However, as the rest of the lounge, including the built-in wooden cabinet to contain the tank, was completed to the original tank dimensions, there was not room for the angle frame to be on the outside. For this reason I ordered, to the

'crate's' internal measurements, a frame of 2-inch angle with provision for two tie-bars from front to back at the top of the tank. This was well drilled (approx. 300 holes) and screwed through to the wooden 'crate'. The tank was then put into its final position in its mahogany cabinet.

The next stage was to make the whole thing waterproof with glass-fibre and resin. My local suppliers (Strand Glass Ltd.) were very helpful, in fact they run evening talks on the uses and method of working with glass-fibre. The first step was to paint a good coat of resin overall, including the wooden top, as it was found the wood soaked up the resin quite quickly. Following this two coats of 2 oz. chopped mat were laid over the inside of the tank, including the angle, and up over the top edges. The method of



working is quite simple, if a little uncomfortable (sticky and smelly!). It is best to work with all windows open in the room. Resin is applied over an area and then a previously cut piece of mat is pressed on. Then, with a brush, more resin is worked in until the mat is well saturated, with no air bubbles; a roller helps here. The next piece of mat should be overlapped about 2 inches. Finally, when it has all hardened off, all sharp points and rough edges are cut off.

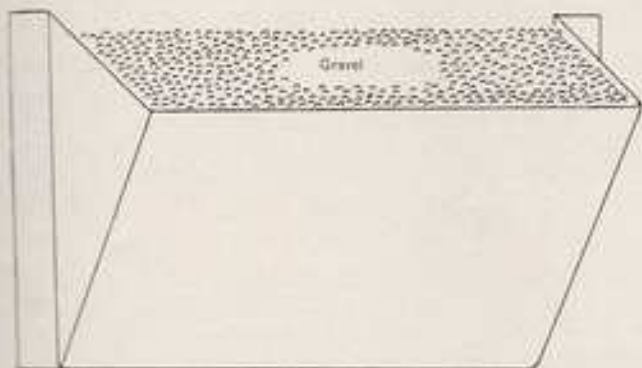
I had already decided for ease of maintenance to have a siphon built-in to the tank and run out under the floor to the front garden. This involved having a large-bore hose, permanently in the back corner of the tank, which was disguised with a piece of flat glass-fibre blanking off one corner. This was liberally drilled, and avoids the sucking out of small fishes.



applied two coats of resin only, over everything, including pockets and plant pots. These last coats may, of course, be coloured with pigments supplied by the manufacturers. My

choice was for a mottled black and navy blue. Before the resin hardened I also threw a few handfuls of sand on to it. All this sort of thing is obviously so much a matter of personal taste, but there is great scope for individual ideas, including probably 'glass-fibre rock' backgrounds.

I now obtained half-inch toughened glass for the front. (This was the dearest item of the whole venture, at £24.) A thick roll of putty was applied to the inside front of the tank and the glass lifted over the tank by myself and two helpers. My first mistake! Although the glass was the right size for the front, it was slightly longer than the corner to corner measurements across the tank top, and would not go in. Luckily, by making a small cut in

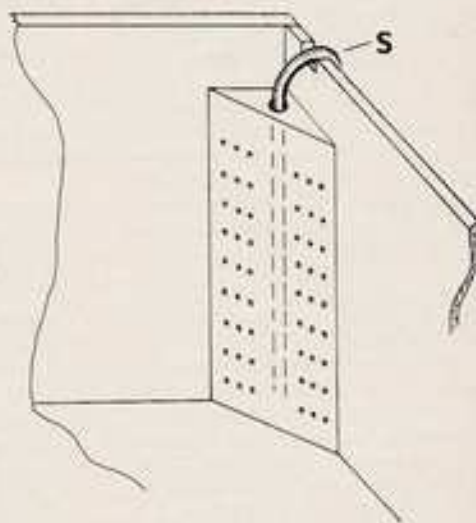


To keep the heater wires and siphon tubes tidily out of sight, small brackets were made in glass-fibre and stuck on with resin all round the top edges of the tank. Heater-holding rings could also easily be fitted in a similar way at the four corners.

In view of the depth of water that the plants at the bottom would have to grow through, and because of my dislike for bare backgrounds, I constructed 'plant pockets' of glass-fibre in an aluminium mould, which were then stuck on to the back of the tank. For the same purpose, half-flower pots were also attached with Sellotape, halfway up the back; resin was then applied over the edges, which served to hold them in place.

As a final waterproofing, I now

Design of the plant pockets fixed to the back wall of the aquarium



Siphoning hose (s) kept permanently in position in a back corner and screened by perforated glass-fibre

two corners we just managed to slide the glass down and into place.

Before sealing inside the glass with silicone sealer, I decided to fill the tank with water, to force the glass into the putty. This was a nerve-racking experience, which took over an hour by hose. The whole tank and floor creaked and groaned under the colossal weight. But no leaks!

After the tank had dried out for several days, I sealed the inside of the glass. Second mistake! Through using too thin a strip of sealer, further inward movement of the putty forced the sealer inward, and broke it away from the glass. I had to re-seal, this time using much more sealer. This time there were no snags. A picture frame mahogany moulding fitted round the front glass outside finished it off nicely, and stopped young fingers from picking out the putty. The tie bars were next bolted across the top, and glass-fibred over to stop corrosion. The tank itself was now completed.

I used a home-made power filter for the tank. Originally the return flow was arranged to spray on to the top of the water. This sounded too much like a public convenience, and the pipe was lowered to water level. The filter sits in a portion of the cabinet set aside for it, together with fluorescent starter kit and other wiring. I have four lighting circuits. One of these is a 15 watt blue light which I leave on all night to simulate moonlight. Heat is provided by four heater-thermostats of 125 watt each (one in each corner).

I arranged large rocks around the tank to retain banks of gravel, but found the gravel running through the cracks. My method of overcoming this was to fill small polythene bags with gravel and put these against the cracks, then fill up the space behind with gravel, which will hold the gravel bags in place. Provided that you take care to trim off all the edges of the polythene bags which stick up through the gravel surface, the polythene is absolutely invisible.

Having finally furnished my jumbo tank, I find it was all worthwhile. No matter how gripping the horror emanating from the goggle-box, my children's eyes are always being drawn back to the constantly changing scene in my tank. Besides—that's always in colour!

Aqua GLOSSARY

No. 1

A PFM guide to the meanings and accepted pronunciation of the scientific names of aquarium subjects, arranged by word-roots in alphabetical order

Erythro (Greek): red. Pronounced 'air-rith-roe'. For example, the specific name of the glowlight tetra, *Hemigrammus erythrozonus* ('hemmy-gram-uss air-rith-roe-zone-uss'), describes the red zone (strip) on the body. The aquarium red-finned shark, *Labeo erythrura* ('lay-bee-oh air-rith-rur-ah'), has a specific name denoting the reddish hue of the tail fin, i.e. *erythro* combined with *uro* (Greek: tail).

Hemi (Greek): half. Pronounced 'hemmy'. For example, the genus *Hemigrammus* ('hemmy-gram-uss') that includes several well known 'tetras' is a name meaning 'half line' (*gramus*, Greek: line). Also the genera *Hemibrycon* ('hemmy-bry-kon'), *Hemichromis* ('hemmy-crow-miss'), *Hemiodus* ('hemmy-oh-duss').

Labi (Latin): lip. Pronounced 'lay-bee'. Fishes with well-developed lips or with feeding habits utilising lip structures often have this word-root as part of their scientific names. For example, the thick-lip gourami, *Colisa labiosa* ('coe-lees-ah lay-bee-oh-sah'), the aquarium sharks of the genus *Labeo* ('lay-bee-oh') and the African cichlids of the genus *Labeotropheus* ('lay-bee-oh-troe-fee-uss').

Pseudo (Greek): false. Pronounced 'sue-doe'. For example, the genus of the 'false sword-bearer', *Pseudaxiphophorus* ('sue-doe-ziff-off-or-uss'), is represented by the two-spot livebearer, a fish showing a very slight extension to the tail's lower rays in the males but not like the 'sword' of the true swordtails (genus *Xiphophorus*). Also the genera *Pseudochalceus* ('sue-doe-kal-acc-uss'), *Pseudocorynopoma* ('sue-doe-korin-oh-poe-mah'), *Pseudopimelodus* ('sue-doe-pins-el-oh-duss') and *Pseudotropheus* ('sue-doe-troe-fee-uss'), and the once-used specific name for one of the cryptocorynes '*pseudobecketti*' ('sue-doe-becket-eye'), i.e. the species mistakenly known as the plant named after Beckett.

Troph (Greek): food. Pronounced 'trof' ('o' as in so). For example, the genus *Labeotropheus* ('lay-bee-oh-troe-fee-uss') of African cichlids, whose feeding habit of rasping at plant growths with their lip structures is responsible for this name (i.e. literally lip-feeder). Also the other African cichlid genus, *Pseudotropheus* ('sue-doe-troe-fee-uss'), that has close affinity with another genus (*Tropheus*) of Lake Tanganyika cichlid.

Xiph (Greek): sword. Pronounced 'ziff'. For example, the live-bearing swordtails are of the genus *Xiphophorus* ('ziff-off-or-uss'), which literally means sword-bearer, the caudal fin extension carried by the males being responsible for this name.

TROPICAL MARINE PROJECT—7

Choosing Your Fishes and

KEEPING THEM HEALTHY

By ROY PINKS

ALTHOUGH before my experiments with marines began I was of the opinion that there must be constant anxiety about the state of health of what, by any terms, is expensive stock, I have been astonished to find that, on the whole, disease has been more of a fear than an actuality. Also, when disease has been encountered it has proved to be an irritant rather than a killer. It may, of course, be that I bought only fishes that were 'obviously' in good shape, and that my source is a most reliable one. Nevertheless there were outbreaks of trouble once or twice but no deaths can be attributed directly to infection, with one possible exception.

I encountered marine white spot, oodinium and lymphocystis, which are probably the commonest troubles likely to be met by the beginner. The first two were dispelled by copper sulphate treatments and the third seems to have cleared itself up. My tank water was treated with the recommended dose of dilute copper sulphate solution when the first fishes were introduced. This was repeated on the third and the fifth day. Later introductions—after about a month—were accompanied by a single 'top-up dose'. Later still I took chances and missed out the medication though I think it would still have been safe to add copper sulphate in such low concentration, particularly if disease had become apparent. The limits are, however, ill-defined and no risks should be taken in any tank containing delicate species. Anemones and other invertebrates are killed by this treatment, so it must never be applied to them in any form.

Copper Sulphate Remedy

Copper sulphate solution, used sensibly, looks to be a really important factor in tropical marine fishkeeping and as a cure for white spot and oodinium it seems to be both safe and reliable. Further, it is very cheap. I believe there are some variations of it with unimportant additives that market at fancy prices without putting up a performance superior to that of the basic compound. Don't be tempted.

Lymphocystis, which is described as forming

white scabby, flaky patches, is something of a puzzle. Early books recommended destroying the victim because the disease is incurable. Later sources suggest that the patches, which can be very numerous, should be removed by surgery, and that the wounds should then be rendered safe with a mild disinfectant like proflavine or acriflavine. I am horrified at the likely reaction by most small to medium sized fishes to untutored surgery, and since shock is often more of a killer than disease itself I have left the two cases I have had strictly alone. One has cleared up, apparently, and the other has got no worse. As the malady is said not to be infectious or contagious I have still two fish and a few blemishes between them. So far as I am concerned one is cured and the other looks a little mothy at certain angles, but it is no more than technically ill.

Undiagnosed Complaints

The day will come, no doubt, when the efficacy of the pale blue liquid will fail, and then I shall be in trouble. In the meantime I rate tropical marines as no more disease-prone than freshwater species and the recovery rate after medication has proved to be remarkably good. Apart from the above complaints there have occurred a number of troubles, which at times looked appalling. A blue-finned pink damsel developed large white lumps, over a period of several weeks. They came and went and then started all over again. An ocellatus butterfly developed rather similar tubercles, coupled with what looked like red wound marks, on its sides. Fins here and there have developed fungoid patches. None of this trouble seemed to spread and since I knew of no specific remedies I fell back on the old notion that perhaps a well-fed fish, and therefore a strong fish, might put itself right more readily than a hungry one. I therefore concentrated on providing an interesting diet during periods when the manifestations were at their worst, and the result was that if there were certain ill fishes, they just didn't look ill.

A further notion I have acted upon was that each tank should be equipped with at least one

neon goby or cleaner wrasse. There is little doubt that both of these creatures in the wild play a significantly important part in the well-being of other species that share their waters. Both of them attach themselves to other fishes, which they minutely examine for pests and parasites. One must assume that they dispose of these without becoming victims of their depredations. The fact that fishes which desire to be treated literally queue for service underlines the social value of these fussy little cleaners, and as both of my tanks have contained at least one representative of this fascinating fraternity for the meaningful period of the experiments, I must acknowledge the real but unquantified assistance provided from this source. The activities of these creatures will continue to be watched most closely for further detail of their whys and hows, and as they are amongst the most beautifully coloured and graceful of the available species for home fishkeeping, the task will be a pleasant one.

Choosing Your Fishes

At this stage I will not attempt to list all the fishes that figured in my initial experiments—these will be treated separately. Instead I will discourse for a little on the options which are open to the beginner at tropical marines. At first glance at the tanks of a well-stocked marine dealer it would seem that the choice is limitless, and certainly there is an almost bewildering assortment. In practice a number of limitations should enable one to make decisions at an early stage, which will stand the test of time. I think it is greatly more important in marine fishkeeping than in the freshwater branch to have a serious initial session on selection of species, because fishes are costly and mistakes seldom affect only the single ill-judged specimen. More likely the well-being of the whole tank is upset or even destroyed as the result of one moment's impulse buying. I have now trained myself to order certain species rather than to buy on the spot what looks likely to match my communities. It is perhaps a rather staid approach but it seems least likely to invite disaster.

It is particularly important that the various families of fishes should first be studied as to average size, habits and environmental requirements. In freshwater fishkeeping you can get away with murder in mixing together every sort of fish that takes your eye, fighters and cichlids apart. Young fishes of nearly every species will rub along together, though it is aesthetically stupid to maintain some of the oddly assorted communities so commonly seen. Certain fishes like oscars and tinfoil barbs will defeat all attempts to dwarf them and will gradually take the ascendancy in a com-

munity. Although similar considerations apply to saltwater species there is the additional factor that very many of them are drastically inclined towards the acquisition and retention, to the death, of an area of territory. The number of fishes that can be accommodated in a seawater tank therefore depends rather more on habit than on oxygen requirements, which in general may be said to equate to those of cold (fresh)water fishes.

A further complication is that a wide range of potential aquarium marine fishes can be ruled out because of their requirement for constant supplies of living algae or plankton. Other candidates may be impossible ones in practice because they are poisonous, either to the aquarist or to their tank companions (or to both!). There's no denying that there is little point in having a marine tank if you cannot include in it some of the most brilliant fishes that live. In fact this can be done quite inexpensively. The trouble is that once this has been done we try to go one better and introduce specimens which are outrageously inappropriate; this tends to happen if we fail to do our homework properly.

Graham Cox's *TROPICAL MARINE AQUARIA*, published in 1971 by Hamlyn, and costing only 40p, is the best recommendation I can make to the beginner in selecting his first fishes—certainly I have found no other book so complete on the subject of temperaments and characteristics of individual species. Even so there are instances where my experiences have so far differed from those of Mr Cox, and I will enumerate these later. Such is fishkeeping.

My own plans included the following groups: damselfishes, butterflyfishes, clowns and wrasse, and one or two oddments; no tangs, no batfish, no angels. The object was to achieve a contented community requiring a bare minimum of specialised care and maintenance, but which would at the same time present a colourful spectacle at reasonable expense. Tangs were excluded because of their dependence on algae, and the batfish because they grow too quickly. The angels were the saddest exclusion, but they are said to grow quite fast and to fancy the tips of *Heniochus* dorsal fins for breakfast. As the latter is one of my favourite fish the angels are taking a back seat for the present. Triggerfishes are in a neutral sort of position at the moment and I am not sure whether to include one or not. On balance I think I shall make room for a very small one some time next year—or earlier if any (unwanted) vacancies occur. Triggerfishes are counted out just now on grounds of their unpredictable aggressiveness, and as the groups I have mentioned have scores of candidates for trial under conditions of acceptable harmony I am content with this bit of considered decision-making.

To be continued

Is it New to You? Photographs by CLIFF HARRISON

Three of the more unusual species seen amongst recent importations of tropical fishes and now available to fishkeepers



Here's one for the admirers of the busy loach-like fishes that spend most of their time in the bottom levels of the aquarium. Identified as *Noemacheilus fasciatus*, this specimen is about 3 inches long and, although varying with mood etc., its body colour is cream suffused with pale pink and shows numerous close-set dark brown spots arranged in large blocks. A fish with an insatiable appetite but full of amusing antics as a community member. (Seen at Inter-Pet's Walton-on-the-Hill Fish Farm, Surrey.)

Given the popular name of parrot dwarf cichlid, the fish on the right (*Etroplus cyanostictus*) is believed to be, at 3 inches body length, a fully grown specimen. It is one of the newly imported cichlid species from Lake Tanganyika and is reputed to be a fairly peaceful African cichlid. Shape of the head and the mouth structure are distinguishing features of this fish; colour overall is green with pale-blue bars. The parrot dwarf cichlid is an algae-eater and can give the appearance of walking on the tank bottom as it moves over it resting on its pectorals. Specimens seen appeared to be most inquisitive—showing a great interest in what was going on outside the aquarium. (Photographed in the fish houses of SCANCO, Colchester, Essex.)



An as yet unidentified species imported from the east and described as the butterfly *Leporinus*. Characteristic swimming position is head down and the low position of the large eye is a distinctive feature. Overall length of specimens photographed (at Harrow Green Aquatics, London) was 5-6 inches. Body ground colours are silver and olive and irregular spots of black form an interrupted lateral stripe.



GUPPY

World

The eventual coloration of a guppy is largely determined by the genetic pattern it inherits, but many fish never develop the colour coding from their parents to the full because of other reasons, some of these being controllable by their owner.

That regular feeding and what you feed play an important part will be supported by all those guppyists who have experimented with colour-promoting foodstuffs. Remember the 'darkening' effect from one commercially produced food which emanated from America?

Even the water in which the guppies are raised can play a part—if not in the eventual colour certainly in the intensity of that coloration.

Soft, acid water has the effect of lightening the overall optical effect. Blue coloured guppies kept in such conditions tend to reflect more green.

If you are seeking the darker hues, the blues and the blacks, then use harder, alkaline set-ups. Here the amount and sort of minerals present in the water also play their part.

On no account try to change the pH of your tanks overnight, and do not introduce guppies from one extreme to the other. Such changes must be brought about gradually.

How to alter and measure the alkalinity or acidity of your tank water has been covered thoroughly quite frequently in books and articles.

She was just sweet seventeen—not old enough even to be a prefect at Roedean—yet she exuded the confidence of one many years her senior.

We were discussing that guppy

question mark: 'at what age can a breeder decide whether to keep or discard a strain?' A subject guaranteed to turn the most placid discussion into a free-for-all.

'They must all be showing well-proportioned bodies and a reasonable outline at from 6 to 8 weeks', she said.

You could hear a Standards Handbook drop!

Even those who admitted that this was not a rigid rule, nodded their heads in agreement. One has

By PETER UNWIN

to make up one's mind at some time and this was as good a time as any.

'Too many breeders waste time and money', she continued, 'hoping against hope that they will be the so-called late-developers, but my pocket money and studies didn't allow for such wastage. We did statistics at school and from what information I could glean I worked it out with my maths teacher. The odds pointed to a decision at 6 to 8 weeks.'

It seemed a pity that such a gal might just get married and give up the hobby!

When it comes to 'weightlessness' our little friends beat the astronauts to it by a good few million years. The protoplasm of the guppy is approximately the same density as the water it swims in and this has allowed Nature to endow it with a light bone structure.

The fins, dorsal, pelvic and pectorals act as stabilisers and all play their part in the movement of the fish.

But then Nature hadn't allowed

for the hand of man. In breeding guppies with larger and larger dorsal fins we are creating a fish that is finding it increasingly harder to swim correctly. Much the same way that, in the dog world, the bulldog breeder in producing a 'show type' animal has attained these standards at the expense of the dog's respiratory system.

Under normal circumstances the erect dorsal fin acts as an anti-roll stabiliser but with this appendage getting broader and longer it tends to hang down the side of the guppy and have the opposite effect to that which the original designer intended.

It is no accident that the deltas and short dorsal veil male guppies swim better than, say, the fantail.

With those ten points for deportment in mind has the time arrived when we should apply some re-thinking to those standard outlines? What do readers think?

Visitors to aquarium shows are often intrigued when examining the guppy entries to see gold and silver stars alongside the usual, and familiar, red for first, blue for second and so on. The plot thickens when it is noticed that not all those entries receiving a first prize also receive a star.

These stars are part of a special merit scheme run by The Fancy Guppy Association, and tie in with the kind of lapel badge each member sports. On recruitment every member wears a bronze delta guppy badge. Then for every winner their bench that is awarded 75 points or over in a single fish class, or 73 points in a breeder's class, they receive a silver star. After winning five of these they exchange their bronze badge for one made of silver. The points to be gained now jump up to 80 and 75 respectively—and yet another five of these awards sees them wearing the gold badge.

Ultimate aim is to complete a rather stiff course involving different shapes of guppies, breeders' teams and competition in Open Shows only, until having clocked up 30 star awards they can claim the Association's top award—the Gold Jewelled Guppy.

Difficult, maybe, but not impos-

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Breeding the ROSY BARB

THROUGHOUT years of breeding barbs one of the most interesting and attractive species I have bred in my fish house has been the rosy barb (*Barbus conchomus*). Its name is derived from the adult male, which, when in good condition, shows a lovely rosy red, coppery flush over its

By
J. LEE



A breeding pair of rosy barbs (*Barbus conchomus*). The male fish is on the right

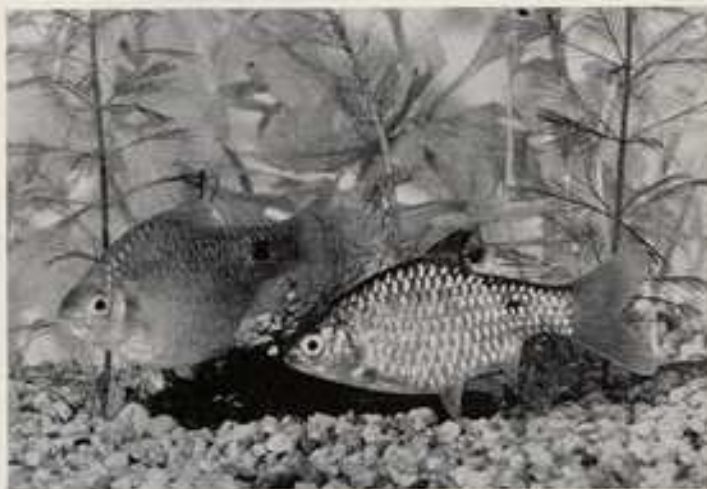


Photo: RUDOLPH ZUKAL

whole body. The male's fins are red, with the dorsal, anal and ventrals overlaid with black. When they are in condition these fish are really quite breathtaking. In comparison the female is paler but she, too, shows a faint coppery sheen all over her body, with a greenish tinge. Her fins are clear and she is usually the bigger of the two fish.

Although rosy barbs are ready breeders a lot of care should be taken if you expect to get good results from the spawning. When I received my six fish from a friend they were about half grown and in very good condition. I grew them on in a 7 ft. tank and when they were sexable I saw that I had four females and two males. Two of the females became ripe with eggs and, separating these and two of the males from each other for the next 2-3 weeks, I fed the selected pairs with a liberal supply of live foods such as white worms,

daphnia, tubifex, chopped earthworms, ghost larvae and a little cod's roe. After about 3 weeks of this diet they were in tip-top condition and so I prepared the spawning tank.

This was a 24 in. by 12 in. by 12 in. tank, painted black on the outside back and sides. It was well scrubbed out and disinfected with Dettol and over the bottom I placed a row of long 1/2-in. diameter glass tubes woven together with light plastic cable. The glass rods took up the whole length and width of the tank and provided a means to stop the parent fish from picking up the eggs from the floor of the tank. As a rule when breeding barbs which are avid egg-eaters I use large pebbles or marbles spread all over the bottom, but I had none available at the time and I was lucky when I found the tubes and discovered they were just the right length. I believe I'm correct in saying that the use of glass rods or tubes is a method from

earlier days of fishbreeding, but they proved very efficient when eventually spawning took place.

Well matured water, 6-7 in. depth, was added to the tank and then topped up with about 2 in. of filtered rainwater. I placed a large clump of well-washed willow root in the centre of the tank with bunches of *Ambulia* and *Myriophyllum*, a few floating Indian ferns and a patch of *Riccia* and bladderwort. The temperature was kept between 77° and 80° F (25-28°C). pH was in the region of 6.8-7.0 (water hardness was not checked).

The pair selected to spawn was a male about 1½ in. in length with a female about 2½ in. long. The pair were put into the tank very early in the morning and allowed to settle down. When the sun came up it seemed to spark them off. The male flashed around the female, doing a sort of spectacular war dance, and from the lateral line right along his body he seemed to glow and glitter in the light. Suddenly he bundled her to one end of the tank, butting and nudging her. Trembling side by side they chased from one end of the tank to the other, then back again.

After several matings they would tremble near the back of the tank amongst the plant thickets, seeming to be almost motionless for a time. Then, after a few more flashing moments round the female, the male would drive her off again, using the full length of the tank in the chase. After about 2-3 hours things seemed to quieten down and the female was obviously slimmer. Her eggs seemed

quite spent, so very gently I took the breeders out and separated them.

As rosy barb eggs are small, light and adhesive, they fell all over the tank, sticking to the plants and all over the bottom right down in between the glass tubes out of reach of the parent fish. I shaded the top of the tank with a sheet of brown paper for the next 48 hours and added a few drops of acriflavine. Quite a few of the eggs developed fungus but on a final count there turned out to be a good spawning totalling 240 fish, after the runts had been culled. After a few days the fry were seen all over the tank—on the plants, on the sides; and even then one could detect a slight golden colour in their bladders as the fry swam up into the light searching for food.

The food provided was *Infusoria* at first, followed by rotifers and brine shrimps and then later micro worms. After this they were able to take Grindal worms, sifted daphnia and fine cyclops. They grew rapidly on this diet and, after a few weeks, began to take shape and resemble their parents. I found, when breeding rosy barb, that they need heavy feeding when young. Indeed, feeding to satisfy their appetites seemed at times to be endless.

Rosy barb can look quite drab in an aquarium but given good conditions—plenty of food and room to move in—they will give you great pleasure and certainly lay claim to a place in any community tank for movement and beauty.

Guppy World

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sible, because some 15 hobbyists have made the final grade, one even completing the course twice. But then his name is Curry, and we all know what hot stuff that is!

• • •

The subject of space doesn't only occupy the imaginations of the science fiction writer or the minds of NASA employees; it is also a subject much discussed in guppy circles. Guppy breeders never seem to have enough tanks or room to house their stocks.

'If this is true', writes a reader, 'why then do you advise that young fry should not be raised in the same aquarium as the adult fish? Advising separate tanks is only adding to our troubles.'

Apart from the obvious reason—cannibalism, many young guppies are frightened by the presence of larger fish and in hiding away miss out on important feeds. To attain full growth a young guppy must have a full tummy for the first few weeks of its life.

Fry also require highly concentrated diets, foods that would quickly fatten and ruin an adult fish. If any of your prize females are displaying 'midriff bulge' or signs of fatty degeneration, just check that they aren't gorging themselves on food originally intended for youngsters.

• • •

'If you can't beat 'em—join 'em' goes the adage and it wasn't until I did just that and had a long chat with a Fire Safety Officer that I realised just what risks we hobbyists run from faulty aquarium equipment. Accidents in the fish room we tend to regard rather like burglaries, floods and winning the Pools—they only

happen to others!

And it isn't just the hazard from fire! What about our tank staging? Some of the guppy set-ups I have seen were strong enough to support the Forth Bridge, but better this than some of the gravity-defying effects one so often sees.

The 2 foot stand you bought last year: it wasn't intended that by the addition of a piece of board you could use it to hold a 36 in. by 15 in. by 12 in. And how many of us are guilty of having staging originally intended for small tanks (when the hobby was new) and which, as the need for more space grew more pressing, we used for those angle-iron monsters! Rather than risk being crushed to death I have often heaped a hasty retreat from such set-ups.

Examine yours and if it causes any doubts whatsoever, start to strengthen it now. Having a tank full of water on one's foot can raise peals of laughter when the story is told at the club, but it's no laughing matter if it crushed a child. Don't gamble with equipment and staging.

Coping with Fishes when it's

Your Time to Move

By D. SMALLEY

YOU may be surprised to know that, on average, house-owners move once every 8 years. This may be caused by a change in the location of employment, by family circumstances or just by improving accommodation, but it means that your fish and tanks may be on the move sooner than you think—a move that at best will bring disturbance and inconvenience but could quite easily prove costly in damage to equipment and be disastrous in terms of stock losses. However, advance planning and organisation will do much to minimise the ill-effects of any such move.



Photo:

D. Smalley

This bramblehead goldfish is dead. Finnacle is well held, body is without damage or bloom, but changed water conditions had a disastrous effect. The risk at removal time can be lessened by planning.

Aquarist friends become invaluable in removal preparations and from my experience I have found that membership of an organisation such as the Goldfish Society of Great Britain provides a wonderful introduction to fellow enthusiasts in a new locality. When I was forced to move from London to Dorset I could not have received a better welcome than to find that a new aquarist friend had made available to me some tanks and pools. I was thus able to move a good proportion of my stock in advance of the actual household

removal itself. In this way it was possible for me to reduce my fish house stock to just two tanks.

To assist in the run-down of my stock, all fish and plants considered not essential after the move were disposed of to shops and aquarists. It is advisable to reduce stock so that all fish retained are not overcrowded in removal. As stock reduces and tanks become vacant, clean them out and prepare them for the move.

Use a Sealant

There is little doubt in my mind that one of the most useful products to be launched on to the aquatic market in recent years is silicone sealer, now available in tubes in most aquatic shops. Good, reputable removal firms are unlikely to break the glass in aquaria, as they will come well prepared for handling them, but vibration in transit may well break the seal between glass and putty. In order to have on hand after the move some serviceable, leak-proof tanks, treat a number of tanks with silicone sealer before you move; invariably the untreated ones will have to be sealed before you can use them in your new location. There is one snag, however, in using the sealer before the move, and that is that if you do get any breakages it is more difficult to remove glass that has been sealed.

As tanks need to be empty during transportation, the majority of plants must be pulled up. This can be done a couple of days before the move, ready for them to be placed in polythene bags shortly before you leave. Specimen plants in pots can remain undisturbed and can be transported by car in a container such as a large bucket.

Legislation over the last few years has placed restrictions on the number of hours drivers can work, and long-distance removals are frequently spread over 2 days—loading and journey on day one, unloading on day two—so all your tanks and equipment on the removal van might be inaccessible for virtually 2 days. Obviously in these circumstances you will want to be personally responsible for the carriage of the fish.

All fish should be well fed and kept in a healthy condition before the move, for facilities are bound

to be lacking at the new property and it is therefore probable that fish and plants will have to 'rough it' until a new set-up can be established. If you can't get plants established quickly and they become tatty, don't despair—it is often amazing the recovery that some plants will make when planted out after what has appeared to be a hopeless situation.

Day of the Move

If you have followed sensible preparation procedures, all you have to do by the time the big day dawns is to deal with the few remaining tanks. It's a good idea to begin to empty these early on the day of removal. Place the fish in fresh water in large buckets or other similar containers, changing the water if necessary, and as the time to leave approaches, fill polythene bags with fresh water. Transfer the fish to these and place the bags in the empty buckets.

Whilst on the road use your car heater intelligently, and if you own a rear-engined car make sure that fish are not placed around a hot engine! A cool journey will mean much happier fish.

One of the precautions I overlooked when I had chosen a new property was to bring back home a container, say 5 gallons, of tap water from the

new house for experiments. In my case this oversight proved to be costly—the fact that my fish were healthy and that I had not experienced tap water problems in the past led to a false sense of security, which had to be paid for by the loss of valuable fish.

I have come to the conclusion that it is not advisable to interrupt the normal seasonal temperature cycle to which fish over 1 year old should have become accustomed. Let's take my own case as an example. I moved at the end of October and most fish were placed in the open in butts. A few fish were brought indoors and it was these fish that became most upset with the different water conditions. As they were being kept in a centrally heated house they did not enter into a state of rest as did those outside. They used up energy swimming around and as the new water affected their feeding a number died whilst the problem was being sorted out.

Although I realise that this article is unlikely to be of immediate benefit to the majority of readers, statistics show it is more than likely that you are unwittingly a day nearer to leaving your present home for somewhere new. Let's hope therefore that things go smoothly for you and your fish at the time of 'Your Move'.

Book Review

TROPICAL FISH IN COLOUR by Braz Walker. 256 pages, colour photographs and line illustrations. Blandford Press, London. £1.20.

THE compact pocket-book form of *Tropical Fish in Colour* might give a misleading impression about the amount of information contained within it. In fact it covers with great economy of words about 120 species

of interesting aquarium fishes, all depicted in colour in a pleasing collection of photographs. These fishes are chosen from 74 genera of 32 families, so that the selection represents a good variety of fish types and habits. This justifies the book's claim to be a 'guide to the identification' of fishes, and notes at the front of the book explain identificatory features of several of the groups. Each entry for a fish species has the facts about it sum-

marised under the headings Habitat, Description, Length, Care, Feeding and Breeding. In the section for cichlids four of the 'new' Malawi fishes are included, and elsewhere in the book species are dealt with that similarly are not a 'mixture as before' selection. The American author, Braz Walker, will not be unknown to aquarists in the U.K., owing to his articles and pictures in *PFS*, and his new book will certainly not disappoint his readers.

Meetings and Changes of Officers

BANBURY & DAS. President, Mr E. B. Lee of Lee Road & Co. (London) Ltd.; chairman, Mr I. Ward; secretary, Mr B. Hill (4 Proctor Close, Banbury); treasurer, Miss H. Koen; social secretary, Mr L. Poole; show secretary, Mr P. Hill. Meetings now on the second and fourth Sunday of month, the Coronado Club Room, Rutland Row, Banbury, 7.00 p.m. New members welcome.

BRADFORD & DAS. New secretary, Mr E. J. Brown (3 Garden Field, Wjke, Bradford).

CHESTERFIELD & DAS. New secretary, Mr J. W. Tomlinson (15 Broadway Drive, Wingersworth, Chesterfield, Derbyshire S42 6SL).

EAST ANGLIAN FEDERATED AQUA-

RISTS, New Federation. Chairman, Mr W. Card (Ipswich); treasurer, Mr D. Casham (Gt. Yarmouth); secretary, Mr J. H. C. Wood (47 Mouse Lane, Blackthorpe, Bougham, nr. Bury St. Edmunds, west Suffolk); judges secretary, Mr C. Williamson (Norwich).

HUCKNALL & BULWELL AS. New members please contact Mrs B. Richardson (11 Newbarn Drive, Western, Borden, Nottingham; phone 72049).

ILFORD & DA & PS. President, Mr H. Birge; vice-president, Mr L. Smith; chairman, Mr J. Sturton; vice-chairman, Mr W. Rowe; treasurer, Mr M. Bell; assistant, Mr G. Ingh; secretary, Mr R. Bath (103 Heath Road, Chadwell Heath, Romford,

Esea); assistant, Mr J. Hattam; show secretary tropical, Mr D. Newman; show secretary coldwater, Mr H. Berger; press secretary, Mr M. Perry. Meetings second Monday in month, 8.00 p.m., St. Laurence Church Hall, Hareton Avenue, Barking-aid.

MACCLESFIELD AS. New Secretary, Mr E. England (13 Hedwick Drive, Macclesfield, Cheshire) for details of future events including table shows, slide shows etc.

PORTSMOUTH AS. New Secretary, Mrs J. C. Scollard (34 Salcombe Avenue, Copnor, Portsmouth PO1 6LD, Hants.).

WREXHAM TFS. Meetings: second and last Thursday of month, The Fellowship Hall, Bradley Road (at junction of Watney Road), Wrexham. All welcome.

WELBECK AS CASTLEFORD. Showman: third Wednesday of month 7.30 p.m., the British Legion Club, Welbeck Street, Castleford, Yorks.

Spawning the Thick-lipped Gourami



Colisa labiosa

By RUDOLPH ZUKAL

Photographs by the author

THE labyrinth fishes (Anabantidae) of south-east Asia, being mostly attractive, quiet and easy to rear, are much loved by aquarists. The thick-lipped gourami is one of the peace-loving species, even though it may grow to about 3½ in. (9 cm.) in size, but it is probably true to say that it is not seen in aquarists' tanks as often as, for example, the dwarf gourami (*Colisa lalia*) or the fighter (*Betta splendens*).

The 'thick-lip' comes from Indonesia (Borneo) and was imported into Europe for the first time quite a few years ago; but the earlier imports were for the most part *Colisa fasciata* (imported into Europe from 1901 onwards) or local forms of it. Even today the true *Colisa labiosa* is not so easy to find. But *C. fasciata* has a longer body, a red-spotted dorsal fin clearly separated from the caudal and a pointed anal fin red-bordered with a metallic blue glitter. Compared with this, *C. labiosa* is a stocky fish, its dorsal stretching up to the caudal, flag-like and coloured brown to dull blue without spots. The anal fin is rounded softly at the end and tinted dull blue, with yellow to porcelain-white points to the rays.

Its mouth is small but with conspicuous thick lips. The coloration is bluish-green and there are uneven, mainly reddish, diagonal stripes appearing towards the back of the body. Gills and belly, normally grey-white, become dark violet with excitement. The caudal fin is brown and the points of the dorsal and anal fins are blood-red. The thread-like, elongated ventrals are red in the male and colourless in the female.

Translation by F. MARSH

GARDEN POND IN AUGUST



By
BRIAN FURNER

Photograph by
the author

Keeping Terrapins Out of Doors

ALTHOUGH this is about keeping freshwater 'turtles' I would at the outset make it quite clear that I would much like our government to ban their importation. Out of every thousand imported I rate the deaths as at 999 within one month. How many die in transit, I don't know—and the poor creatures must surely suffer the cruel packaging nested out to that other sufferer from man's stupidity and greed—the tortoise.

My own practical studies of freshwater turtles (terrapins) started because I found that salesmen in the so-called pet shops knew absolutely nothing of the natural habitat nor even the names of the varieties they were selling. That more of the turtles in pet shops do not die whilst there, is only because turtles usually take such a long time to get death over with.

Many pet shops offer booklets on the feeding and care of turtles. All such booklets I have come across are American originals or reprints made here. The instructions refer exclusively to American conditions and to American freshwater turtles. Among books on the subject, the only trustworthy British author is, in my opinion, Mrs Kathleen Pickard-Smith. Her book (1972) WITH 30771123 really does ring

true. The publishers, Thomas Nelson & Sons, Edinburgh, are also to be congratulated. They allowed Mrs Pickard-Smith to relate several mistakes she made. This helped me a lot although I made plenty more!

For garden pools, none of those pretty green turtles, sold wherever a stall can be erected in a street market, will do. Although sufficiently hardy for the garden pool, take my advice and do not invest in baby specimens of the Caspian (*Clemmys caspica*) or the European (*Emys orbicularis*) terrapins. I did and they died. Both species, if a good 2½ in. or so in length, will thrive if you give them perfect conditions. Perfect conditions vary according to the facilities you have.

Ideally you should have a greenhouse that is heated in winter. The higher the temperature between December and March the better. The greenhouse must have a small, shallow pool. This could be a plastic wash bowl sunk in the ground. Food must be given several times weekly. After each batch of food has been devoured, the bowl needs a rinse. The turtles may, if you wish, remain in the greenhouse throughout the spring and summer. Because the greenhouse door is bound to be open often between late May and late

September, for allowing tomatoes or other plants adequate ventilation, it is necessary to rig up something at the door so that the turtles do not make their exodus and wander off.

Pool turtles may remain in their pool in the garden from late March until late October. They need a special pool because their dirty habits would foul a small or medium garden fish pool. Turtles spend most of their time on land and somewhere for them to bask must be arranged. This must be sufficiently high above water so that the whole body of the turtle dries. Sharp rocks are not suitable. Best is a large log of wood. If a basking area can be fitted alongside, but outside of, the pool, this is ideal. Turtles do not take to one pool as home. A low wall around the pool will prevent pet turtles from wandering. I use small mesh chicken wire. Whether any handy turtles will take vegetation, I do not know. The various species I have kept have taken only raw meat. But a pool without weeds is an unnatural home for turtles and my turtle pool is well stocked with plants. Do not include irises or the reed mace in aquatics for a turtle pool. If these top heavy plants blow down,

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by
ARPEE

Personal COMMENT

NATURE without contrasts would be inconceivable. If all our tanks contained cardinals we should soon look elsewhere for inspiration. The 'foil fishes'—or those we use to complement the brighter species—are important in their own right and should be sought after by the aquarist as assiduously as the others. In fact, their acquisition should be even more carefully cultivated than one supposes because the more garish fishes really choose themselves in most cases. I was delighted therefore to make the acquaintance of the diamond tetra at a show in which a particularly fine specimen had taken a top award.

From where I sit, this fish seems, over the years, to have qualified for a Most Underrated Fish award, and I cannot account for this, unless an unpredictable supply position has made it less of a stock item than it deserves to be. *Moenkhausia pittieri*, to be specific, is immediately something of a quiet beauty. True, when young it seems merely to be another of those indeterminate silvery fishes which come in with other importations and turn out to be even more indeterminate (but larger) as time passes by. Large and indeterminate fishes become embarrassments with age and are best avoided at the outset if we have but the insight!

However, there is something about this fish, even at this early stage, which should take one's eye. The dorsal and anal fins usually give promise of a lengthening and a broadening which ultimately provide the fish with a flowing, luxurious, look. As this comes with greater age it is seldom seen and appreciated in the dealer's tank. The hues of the diamond tetra are largely silver with a bluish overtone which reminds me inescapably of Indian Tonic Water. Numerous offset scales on the body cause them to glisten like jewels, and groups of them come into play as the fish moves into and out of the main light sources. One moment the fish may seem rather dull and featureless, but in a twinkling, literally, it is alive with brilliant specks of light which may disappear as quickly as they come.

One of the drawbacks of foil fishes is that few of them reach any sort of size, even when adult, and as a consequence their mediocrity is accentuated,

if anything. In the case of the diamond tetra, 3 inches can be attained by a good specimen, and the average for a mature fish is close to 2½ inches: this, coupled with a nice body depth and those lovely flowing fins, gives an impression of a much greater area of fish than in reality exists. It is thus required in fewer quantities than other contrast fishes, and as this may mean that choice specimens might be allowed to mature in dignified fashion (they like a lot of room), the rewards should be well worth striving for.

I managed to secure some diamond tetras earlier this year, and although I lost one of the trio, the other two have made very good progress in my tank of mixed tetras, and are fulfilling their intended rôle quite admirably, though they are as yet nowhere near the size I hope they will reach. A little scrapping between them earlier on did not spread to the other fishes, and could have resulted from a sexual cause, but there have been no signs of an actual spawning. This, if it occurred, would be interesting, as they are said not to be the most willing breeders, but from their behaviour so far in community conditions I would not consider them to prove too reluctant in a tank of their own containing rainwater and a lot of plants (such as *Myriophyllum*) in which to cast their eggs, in typical egg-layer fashion.

They have a reputation for nibbling plant life, and as this usually means that your most tender and choice water plants disappear, it could be politic to include some duckweed or lettuce to supplement their diet. I have had no indication of this tendency thus far, but as I have fed them with a dried food which contains a fairly high proportion of green flakes, their longing may have thus been appeased. I hope so, for their undemanding appetite and attractive disposition have contributed to making them what seems to be ideal community fish, and it would be a pity if any lapse from grace should now occur.

I am watching them carefully for all-round compatibility and cannot finally report on them for at least another year, by which time they should have made or marred their reputation, but on the evidence so far I rate them as no unreasonable challenge for the average fishkeeper. The greater problems confronting him, probably, will be the getting of them, so here, then, are the added pleasures of the chase.



If anybody addresses me as an expert in fish-keeping I usually point in the opposite direction and take to my heels. This is not necessarily to say that I know greatly more or less than anybody

East London. Other enjoyable and informative lectures have included one by Mr Roy Skipper, president of the Society, on diseases. Meetings are held each Thursday at 8.00 p.m. and the first Thursday of each month sees a change from outside speakers with the programme consisting of a table show and talk/lecture happening organised by a club member. Table shows, while perhaps lacking in number, certainly make up for this in quality and leading point scorers towards the club's show trophy are: 1, Mr H. Watts (63); 2, Mr R. Thompson (58); 3, Mr T. Glass (55) and 4, Mr R. Maynard (27). Anyone interested in joining the "Thursday Night Thing" can contact Mr R. Maynard, secretary, 92 Cotswold Gardens, London, N.W.2 or attend a meeting at the Henry Burden Hall, opposite Hendon Town Hall.

OF 263 entries in the BILLINGHAM AS Open Show, a *Pelmatochromis* annectens entered by Mr H. Peaseck of Stockton won the best fish in show award.

Guppies: 1, Mr & Mrs Sewerly (M. Pleasant); 2, Mr & Mrs Kilvington (Doncaster); 3, Mr K. Hensley (Stockton); Mollies: 1 & 2, Mr D. Stodd (Swillington); 3, Mr C. Ewright (Houghton, Swales); 4 & 5, Mr & Mrs Sewerly; 2, Mr & Mrs Kilvington, Pairs; 1, Mr D. Stodd; 2, Mr & Mrs Fleet (Billingham); 3, Mr K. Hensley.

Charras, large: 1, Mr Pickett (Hemsworth); 2, Mr Widdow (Cleveland); 3, Mr P. McAine (Half Moon, Swales); 4, Mr & Mrs McCannaghan (Cleveland); 5, P. F. & E. Reynolds (Swillington); 1, Mr Kell (Billingham). Cichlids, large: 1, Mr H. Peaseck (Stockton); 2, Mr C. Ewright; 3, Mr J. Lockwood (Half Moon, Swales); 4, Mr N. Watson (Hartlepool); 5, Mr R. Greenley (Half Moon); 2, Mr J. A. Hellen (Houghton). Barbs, large: 1, Mr J. A. Hellen; 2, Mr N. Watson; 3, Mr R. Adams (Hartlepool); Small: 1, Mr M. Ross (York); 2, Mr C. Ewright; 3, Mr & Mrs Brown (Half Moon).

Egg-laying toothcarps, rubrons, danios, minnows: 1 & 2, Mr F. Soutley (Independent); 3, Mr & Mrs McCannaghan, Labyrinth: 1, Mr D. Clark (Half Moon); 2, P. F. & E. Reynolds; Mr & Mrs Kilvington, Angels: 1, Mr C. Ewright; 2 & 3, Mr & Mrs Blackwood (Billingham). Fighters: 1 & 2, Mr & Mrs Walker (Stockton); 3, Mr K. Hensley (Stockton). Catfish: 1, Mr & Mrs Wella (Doncaster); 2, P. F. & E. Reynolds; 3, Mr J. Gowersley (Half Moon). Sharks: 1, Mr & Mrs Marshall (Half Moon), A.S.V.: 1, Mr P. Skellin (Hartlepool); 2, Mr J. A. Hellen; 3, Mr & Mrs Wella.

Breeders, egg-layers: 1 & 2, Mr F. Soutley; 3, Mr F. Patten (Half Moon). Livebearers: 1, Mr & Mrs Kilvington; 2 & 3, Mr & Mrs Marshall. Pairs, egg-layers: 1, Mr J. A. Hellen; 2, Mr D. Hales (Swillington); 3, Mr & Mrs Fleet, Livebearers: Mr R. Hodop; 4, Mr P. McGer (Half Moon); 5, Mr N. Simpson (Half Moon). Furnished aquarium: 1, Mr K. H. Hensley; 2, Mr D. Clark; 3, Mr J. Henningson (Half Moon). Furnished live: 1, Mrs Harlow (Cleveland); 2, Mr & Mrs Marshall (Half Moon); 3, Mr & Mrs Brown (Half Moon). Jurors: 1, D. Brown (Half Moon); 2, K. Elwood (Half Moon); 3, K. Barrett (Doncaster).

HOUNSLOW & DAS enjoyed a pleasant evening when two of the Society's most experienced members,

FEDERATION



NEWS

The Supreme Championship 1972: Results so far

1972 Championship Class Results

Class Ba	Barbs (Medway AS Show)	Mrs R. Coyle (Independent AS)
Class D	Cichlid (Tottenham & DAS Show)	Mr A. Kinsey (Independent AS)
Class Db	Cichlid (Stockton-on-Tees Show)	Mr I. H. Heptinstall (Castleford)
Class Dc	Rift Valley cichlids (Rochampton AS Show)	Mr R. Bowes (Independent AS)
Class G	Catfish (Thurrock AS Show)	Mr D. Lambourne (Rochampton)
Class H	Corydoras (Cothy & DAS Show)	Mr R. Wright (East Dulwich AS)
Class K	Danios & minnows (High Wycombe AS Show)	Mr R. Newman (Uxbridge & DAS)
Class Nb-m	Egg-layer pairs (Yervil & DAS Show)	Mr A. Blake (Basingstoke & DAS)
Class P	Guppy, female (Independent AS Show)	Mr P. Coyle (Independent AS)
Class Q	Swordtails (Runnymede AS Show)	Mr S. Mason (Rochampton)
Class R	Platy (E. Dulwich AS Show)	Mrs D. Cruickshank
Class S	Mollie (Southend, Leigh & DAS Show)	Mr D. King (Kingston & DAS)
Class V	Twintailed goldfish (Anson AS Show)	Mr J. S. Hall (Aireborough AS)
Class X-t	Breeders (Half Moon AS Show)	Mr & Mrs Kilvington (Doncaster AS)

Forthcoming Championship Class Shows

Date	Location	Class	Notes
5th-12th August	Portsmouth AS	Eb*	Colias etc.
6th August	Tonbridge & DAS	L*	Loach
12th August	Bracknell AS	J*	Rasbora
26th August	Plymouth AS	No-t	Pairs
19th August	S.P.A.S.S.	U*	Singletailed goldfish
2nd September	Bethnal Green AS	O*	Guppy male
3rd September	Wellingborough & DAS	B*	Barbs
10th September	Weymouth & DAS	Xb-m	Breeders
16th September	Hounslow & DAS	F*	Egg-laying toothcarps
24th September	Torbay AS	Cu*	Hypheosobranch etc.
24th September	Washington AS	Da*	Angels

* Winners of Federation Championship Trophies in classes for single fish automatically become eligible for the Supreme Championship Trophy Competition (to be staged at The AQUARIUM SHOW '72 at the Royal Horticultural Society's Old Hall, London, S.W.1, 27th-29th October). Six awards are made at this Competition.

Mr H. Pratt and Mr B. Nelbans, presented a slide show and talk. Members were invited to test their knowledge of fishes by ticking the names of each species as it was shown on the screen and after the slides were completed a summary of each fish was given. Both members were

thanked sincerely for the considerable amount of work that had gone into the preparation of this instructive entertainment. Hounslow members also visited RUNNYMEDE AS, when the latter were hosts at a recent inter-club contest. The best fish in show was owned by

a Runnymede member but Hounslow took first place in the contest by the amalgamation of points for second, third and fourth places. Not as well placed in the first round of this season's RHKR League competition, Hounslow came fourth (1, Kingston; 2, Roehampton; 3, Runnymede). Visitors are welcome at 8.0 p.m. on alternate Wednesdays at St Stephens Church Hall, Whitton Road, Hounslow.

A LARGE number of visitors attended the **BOURNEMOUTH AS** Open Show and among the 400 entries were some from as far away as South Wales. The best fish in show award was won by Mr R. Bowen, with a mosquito fish, and the best coldwater fish in the show was a fantail owned by Mr V. Collins.

- R. 1, Mr R. Basson (81); 2, H. & S. Farnish (81); 3, Mr T. Hutton (80); 4, Mr H. Peck (79); 5, Mr D. Brooks (78); 6, Mr J. Goddard (77); 7, Mr M. Stanger (76); 8, Mr J. Jeffrey (75); 9, Mr P. Corle (74); 10, Mr R. Wynn (73); 11, Mr D. T. & S. Mr R. Wynn (72); 12, Mr H. Mann (71); 13, Mr G. Fisher (70); 14, Mr R. Hemmings (69); 15, Mr B. Brooks (68); 16, Mr M. Collins (67); 17, Mr R. Brooks (66); 18, Mr D. Brooks (65); 19, Mr E. Jones (64); 20, Mr & Mrs Hadden (63); 21, Mr J. Edwards (62); 22, Mr M. Squire (61); 23, Mr M. Stanger (60); 24, Mr R. Bowen (59); 25, Mr L. Madley (58); 26, Mr M. Spalding (57); 27, Mr R. Gidd (56); 28, Mr R. Bowen (55); 29, & 30, Mr L. Little (54); 31, Mr G. Fisher (53); 32, Mr B. Basson (52); 33, Mr R. Clough (51); 34, Mr P. Corle (50); 35, Mr R. Bowen (49); 36, Mr R. Gidd (48); 37, Mr R. Basson (47); 38, Mr G. Alexander (46).

- Q. 1, Mr R. Hemmings (77); 2, Mr F. Churchfield (76); 3, Mr T. Hutton (75); 4, Mr D. Neal (74); 5, Mr P. Corle (73); 6, Mr B. Adams (72); 7, Mr A. Lovelady (71); 8, Mr B. Bowen (70); 9, Mr R. Basson (69); 10, Mr R. Bowen (68); 11, Mr R. Bowen (67); 12, Mr M. Stanger (66); 13, Mr M. Mansbridge (65).

- A. 1 & 2, Mr B. King (70, 71); 3, Mr K. Whiting (68); 4, Mr A. Lovelady (65); 5, Mr B. Adams (72); 6, Mr H. Greenhalgh (74); 7, Mr V. Collins (best coldwater fish in show, 81); 8, Mr R. King (75); 9, Mr V. Collins (74); 10, Mr V. Hees (73); 11, H. & S. British (67); 12 & 13, Mr E. Jones (66, 76); 14, Mr R. Basson (78); 15, Mr L. Little (71); 16, Mr M. Stanger (74).

EAST ANGLIAN societies are invited to participate in the new **EAST ANGLIAN FEDERATED AQUARISTS** organisation set up to help promote the hobby in this part of the country. It is proposed to arrange quarterly meetings, open shows, competitions, film and slide shows and to set up a classification board for speakers and judges within the East Anglian area. The inaugural committee meeting was held at Bury St. Edmunds in May and Bury St. Edmunds, Gt. Yarmouth, Ipswich and Norwich AS were each represented by four members. Interested societies should write to the secretary, Mr J. H. C. Wood, 47 Mousse Lane, Blackthorpe, Bougham, nr. Bury St. Edmunds, west Suffolk. The first EAFA Open Show was held in June by

way of experiment to see how such a show would succeed. Each society supplied one judge while many members helped with the film and slide show entertainment, raffle, and most helpful of all, their time and knowledge. All of which resulted in 119 entries being shown in 18 classes in two very crowded halls. The junior section produced 17 entries. The best in show award was won by Mrs White of Great Yarmouth with a rufy shark. The next show will be held in September.

BRISTOL TFC staged their finest three-day Open Show yet with all available tanks being filled with the 329 entries. The standard of exhibits was extremely high and the wide variety of fish confirmed the strength of the hobby in the south west. The Club wish to express their appreciation to the manufacturers who supported the show and the judges who carried out their task so thoroughly. Mr and Mrs Eager received the highest number of points and the King British award

BEACH CITIES CICHLID ASSOCIATION, USA, would like to exchange bulletins with British societies and would also enjoy hearing from individuals. Please contact Mr Jim Greenwald, 711 Hermosa Avenue, Hermosa Beach, California 90254, U.S.A.

for highest number of points gained by a Bristol TFC member. Mr L. Littleton received the best fish in show award.

- Sixteen fighters: 1, 2 & 3, Mr J. Hampshire, Ladbroke; 4, Mr S. Green; 5, Mr J. Hampshire; 6, Mr G. Fisher; 7, Mr & Mrs Eager; 8, Mr S. Bethel; 9, Mr & Mrs Eager; 10, Mr N. Lewis; 11, Mrs B. Pedersen, A.O.V. champion; 12 & 13, Mr R. Hyett; 14, Mr & Mrs Eager; 15, Mr D. Warmson; 16, Mr & Mrs Eager; 17, Mr J. Hampshire, Dwarf cichlids: 1, Mr D. Noble; 2, Mr & Mrs Eager; 3, Hampshire, A.O.V. cichlids: 1, Mr & Mrs Eager; 2, Mr S. Green; 3, Mrs B. Pedersen, Cichlids: 1, Mr L. Littleton; 2, Mr R. Lawrence; 3, Mr D. Tremlett, A.O.V. catfish: 1, Mr N. Gray; 2, Mr B. Green; 3, Mr B. Day; 4, Mr D. Noble; 5, Mr P. Lewis, A.V. sharks & lurchers: 1 and 2, Mr A. Whitrow; 3, Mr J. Hampshire, Molias: 1, Mr S. Bethel; 2, Mr D. Warmson; 3, Mr M. Fildes, Snoods: 1, Mr B. Lawrence; 2, Mr S. Bethel; 3, Mr J. Hampshire, Pirys: 1, Mrs R. Martin; 2, Mr G. Fisher; 3, Mr & Mrs Eager; 4, Mr R. Parsons; 5, Mr M. Elick, Guppy, female: 1 & 2, Mr P. Lewis; 3, Mr & Mrs Eager, A.O.V. tropicals: 1, Mr R. Day; 2, Mr G. Fisher; 3, Mr L. Littleton, Broadwing, egg-layers: 1, Mr J. Hampshire; 2, Mr D. White; 3, Mr S. Anderson, Livebearers: 1 & 2, Mrs K. Martin; 3, Mr P. Lewis, Killifish: 1, Mr B. Chapman; 2, Mr P. Lewis; 3, Mrs B. Pedersen, Betta: points: 1, Mr J. Brackin; 2, Mr J. Roberts; 3, Mr R. Hyett, A.V. egg-layers (gender): 1 & 2, Nigel Gray; 3, Mash Eager, Livebearer, individual furnished, female: 1, Mr P. Lewis; 2, Mr R. Bennett; 3, Mr G. Fisher,

A **CLIMBING** perch entered by Mr G. Greenhall of Kingston won the best in show award at the **RIVERSIDE AS** Open Show.

- Furnished aquaria: 1 & 2, Mr M. Goss (Riverside); 3, Mr J. Batts (Eding); 4, Mrs J. Ross (East London); 5, Mr S. Hancock (Roehampton); 6, Mr J. Berra, Charrins: 1 & 2, Mr J. Pollard (Kingston); 3, Mr S. Mason, Cichlids: 1, Mr J. Batts; 2, Mr B. Bowen (Ind.); 3, Mr W. Goodwin (Hitchley), Anguis: 1, Mr J. Batts; 2, Mr J. Healy (Eding); 3, Mr M. Chapman (Basingstoke), Dwarf cichlids: 1, Mr M. Chapman; 2 & 3, Mr W. Goodwin, Labyrinth: 1, Mr G. Greenhall (Kingston); 2, Mr D. Mackay (Kingston); 3, Mr D. Arrows (Riverside), Siamese fighters: 1 & 2, Mr T. Vickers (East London); 3, Mr A. Taylor (Arson).

- Egglaying toothcarps: 1, Mr W. Goodwin; 2 & 3, Mr T. Glass (Hendon), Tropical catfish: 1 & 2, Mr G. Greenhall (Kingston); 3, Mr J. Batts, Corydoras & loaches: 1, Mr J. V. Mash (Eding); 2, Mr R. Sellers (Basing); 3, Mr B. Bowen, Ruffies: 1 & 2, Mr J. Mash; 3, Mr D. Mackay, Danios & minnows: 1 & 2, Mr B. Bowen; 3, Mr R. A. Moore (Apex), Loach: 1, Mr M. Carter (Basing); 2, Mr Lynamer (Leytonstone); 3, Mr L. Leslie, A.O.V. tropical egg-layers: 1, Mr J. Gerrard (Runnymede); 2, Mr D. Childs (Brockton); 3, Mr R. Bowen.

- Guppies, male: 1, Mr T. Crosschank (Lading); 2, Mr S. Mason; 3, Mr M. Chapman, Guppy, female: 1, Mr P. Moye (Apex); 2, Mr A. Taylor (Arson); 3, Mr R. Basson, Swordtails: 1, Mr S. Mason; 2 & 3, Mr T. Crosschank, Pirys: 1, Mr A. Blake; 2, Mr A. Lovelady (Bourne); 3, Mr D. Crosschank, Molias: 1, Mr P. Moye; 2, Mr M. Neherman; 3, Mr D. Crosschank, A.O.V. livebearers: 1, Mr T. Kola (Eding); 2, Mr B. Basson (Basingstoke); 3, Mr A. Blake.

- Scapulari goldfish: 1 & 2, Mr F. Fisher; 3, Mr J. Pollard, Twintail goldfish: 1, 2 & 3, Mr J. Sutherland (Riverside), A.O.V. coldwater: 1, Mr T. Batts; 2, Mr M. Stanger; 3, Mr M. Goss (Riverside), Brooders, egg-layers: 1, Mr B. Newman (Uxbridge); 2, Mr D. Childs (Brockton); 3, Mr D. Part (Basingstoke), Livebearers, Mr A. Blake; 4, Mr M. Stanger; 5, Mr S. Powell (Riverside), Pirys: 1, Mr B. Farnell (Uxbridge); 2, Mr M. Stanger; 3, Mr M. Collins (Hendon).

ALFRETON AS & SHERWOOD AS met again for the first leg of an inter-society match. 60 fishes were entered and Mr B. Clarke of Sherwood received the award for the best fish in show. Final results were:

- Charrins, small, Mrs J. Lindley: 2 & 3, Mr M. Darrington, Cichlids, dwarf: 1 & 2, Mr M. Footitt; 3, Miss M. Laidley, Betta, large: 1, Mr B. Clarke; 2 & 3, Mr A. West, Killifish: 1, 2 & 3, Mr S. Hill, Sharks & eels: 1, Mr W. Downing; 2, Mr J. Wright; 3, Mr S. Duxley, Danios & minnows: 1, Mr B. Clarke; 2 & 3, Mr M. Footitt.

MANY exhibitors travelled a long distance to attend the **BOSTON AS** Open Show and the society wish to express their appreciation for the support received. Mr & Mrs Blades of Creswell were successful in winning two major awards—for best fish in show and best tropical fish in show. Mr J. S. Hall was presented with the award for entering the best coldwater fish.

- Livebearers, Guppy: 1, Mr Kirk & son (Grimsby); 2 & 3, Mr B. R. Rodgers (Creswell), Molias: 1, Mr L. Ince (Glossop); 2 & 3, Mr S. Harrison (Sherwood), Swordtails: 1, Mr Kirk & son; 2, Mr R. Halsey (Swillington); 3, Mr & Mrs Conley

(Dovercast), Plaice: 1, Mr C. Ward (Doncaster); 2, Mr D. Studd; 3, Mr & Mrs Davis (Doncaster).
 Barbs, small: 2, Mr James (Gerrards); 3, Mr Footitt (Alfreton); 4, Mr D. Wright (Alfreton). Large: 1 & 2, Mr B. Clarke (Sharnwood); 3, Mrs Rowling (Lancaster). Characins, small: 1, Mr & Mrs Blades (Creswell); 2, Mr Pagnon (Doncaster); 3, Mr D. Moody (Barnold). Large: 1, Mr J. A. Whitley (Aireborough); 2, Mr Hawkins & Mr Whitehead (Gerrards); 3, Mr & Mrs Dowling (Sharnwood). Killifish: 1, Mr J. S. Hall (Airedale); 2 & 3, Mr B. Cooper (Kings Lynn). Mussels & daisies: 1, Mr & Mrs Blades; 2, Mr R. Clarke; 3, Mr Footitt (Alfreton). Sharks & loach: 1, Mr & Mrs Blades; 2, Mr Robinson (Grimsby); 3, Mr Holmes (Derby). Hatchery: 1, Mr R. Hulse (Skipton); 2, Mr Kennedy (Hartley); 3, Mr & Mrs Blades (Creswell). Dwarf cichlids: 1, Mr Reynolds (Skipton); 2, Mr H. Vain; 3, Mr R. J. Rodgers (Creswell). Large: 1, Mr J. Whitley; 2, Mr D. Robinson (Derby); 3, Mrs Rowling (Lancaster). Angels: 1, Mrs Lindley (Alfreton); 2, Mr R. Clarke (Sharnwood); 3, Mrs Lindley (Alfreton). Catfish: 1, Mr R. Bailey (Sharnwood); 2, Mr & Mrs Dowling (Sharnwood); 3, Mr Jackson (Workop). Coelacanths: 1, Mr Davison (Skipton); 2, Mr Ken (Bury St. Edmunds); 3, Mr B. Bailey (Sharnwood). Eelgrass: 1, Mr & Mrs Toyn (Sheffield); 2, Mr Pagnon; 3, Mr Lawson (Workop). A.O.V. goldfish: 1, Mr Swanson (Doncaster); 2, Mr J. A. Whitley; 3, Mr Kirk & Son (Grimsby). A.O.V. tropical: 1, Mr Hulse; 2, Mr Swanson; 3, Mr J. S. Hall. Breeders, egg-layers: 1, Mr H. Kates (Lancaster); 2, Mr & Mrs Walls (Doncaster); 3, Mr & Mrs Blades (Creswell). Livebearers: 1, Mr J. A. Whitley; 2, Mr Jackson (Workop); 3, Mr Spurling (Workop). Parrot: 1, Mr J. A. Whitley; 2, Mr & Mrs J. Egan (Sharnwood); 3, Mr M. Rowe (Sharnwood). Goldfish & corydoras: 1 & 2, Mr J. S. Hall; 3, Mr R. J. Rodgers (Creswell); 4, Sharnwood & Co. goldfish: 1 & 2, Mr J. S. Hall; A.O.V. goldfish: 1 & 2, Mr J. S. Hall; 3, Mr T. Hulse.

MR P. J. CLEMENTS, PRO of MAAS reports that 21 societies entered the Association's inter-society event at Drayton Manor Zoo Park and that over 400 entries were received. He writes: "It was very pleasing to see that the official winner was a newly formed society which has only recently joined MAAS. This was Pebell (59 points) with Midland Tropical second (58), Haden third (57), & 4, Rubery Select (55). It has been decided that this will now become an annual event. The association is also arranging a convention on the 21st October when Dr G. Chubb, Head of Liverpool University's Zoological Department, will be the main speaker. Later a ball will be held.

THE FRAS Championship Trophy, class H (Corydoras and Brochis) was won by Mr R. Wright of East Dulwich at the CORBY & DAS Open Show. Mrs I. Boss (East London) won the Golden Wonder perpetual trophy for best in show with a chequer barb and Mr K. Wrighton, also of East London, the British Steel Corporation's perpetual trophy for best brood. Mr W. A. Hickman of Dudley won the TCW perpetual trophy for best in class (Db).

R: Mrs I. Boss (East London, 85); 2,

Mr J. H. Bos (East London, 84); 3, Mr P. Coyle (East London, 84); 4 & 5, Mr P. Coyle (84, 84); 6, Mr J. H. Bos (84). D: 1, Mrs B. Oakley (Doncaster, 84); 2, Mr R. Sargent (Hertford, 84); 3, Mr A. M. Kinsey (East London, 84); 4, Mr R. Denny (Kettering, 84); 5, Mr D. M. Durr (East London, 84); 6 & 7, Mr W. J. Hickman (Dudley, 84, 79, 78); 8, Mr J. Phillips (WADAS, 79); 9, Mr D. Harding (Lees, 84, 77); 10, Mr M. Chambers (Hertford, 79); 11, Mr R. Jervis (Shefford, 79); 12, Mr D. M. Durr (East London, 77); 13, Mr R. Shadsworth (Bedworth, 76); 14, Mr R. Sargent (Hertford, 74); 15, Mr T. Crutchbank (Ratley, 81); 16, Mr R. Wright (E. Dulwich, 79); 17, Mr F. Marsh (Luton, 78); 18, Mr R. Wright (84); 19, Mr & Mrs R. A. Crocker (TADAS, 79); 20, Mr W. A. Hickman (Hertford, 79); 21, Mr F. Marsh; 22, Mr D. Bennett (Luton, 77); 23, Mr R. Bentley (WADAS, 78); 24, Mr B. Bowen (East London, 84, 84); 25, Mr D. M. Durr (81); 26, Mr R. Bowen (82); 27, Mr P. Coyle (81); 28, Mr A. Harland (WADAS, 80); 29, Mr P. Coyle (81); 30, Mr D. M. Durr (77); 31, Mr R. Wright (84); 32, Mr R. Wright (84); 33, Mr D. Bennett (WADAS, 80, 80); 34, Mrs B. Phillips (WADAS, 80); 35, Mr T. Crutchbank (80).
 Q: 1, Mr R. Bowen (81); 2 & 3, Mr T. Crutchbank (80, 78); 4, Mr T. Crutchbank (77); 5, Mr R. Gifford (Doncaster, 75); 6, Mr R. A. Marshall (Northampton, 75); 7, Mrs D. Crutchbank (58); 8, Mrs V. Marsh (77); 9, Mr L. G. Lottie (Blackpool, 77); 10, Mr P. Moye (Apes, 75, 74); 11, Mr D. M. Durr (71); 12, Mr & Mrs Jones (84); 13, Mr R. Wrighton (80); 14, Mr M. Parnham (East London, 79); 15, Mr & Mrs R. A. Crocker (84); 16, Mr L. G. Lottie (79); 17, Mr D. A. Page (74); 18, Mr A. Weatherly (Kettering, 74).

RESULTS of the MERSEYSIDE AS Open Show have now reached us. The winner of the best in show award was Mrs Standen (Ladies section) of Loynes. Mr D. Charlton received the Harry Swanson trophy for most individual points and Mr K. Parkes the Graham Wood trophy for best barb.

Guppies: 1, Mr S. Michel (Blackpool); 2 & 3, Mr L. Leadbeter (Blackpool). Mollies: 1, Mr L. Leadbeter; 2, Mr R. J. Payne (Merseyside); 3, Mrs A. Gregory (Nelson). Plaice: 1, Mr L. Kaye (Top Town); 2, Mr R. Black (Blackpool); 3, Mrs Roberts (Valley). Swords: 1, Mr C. Backhouse (Gillham); 2, Mr D. Walker (Hansons); 3, Mr A. Derby (Hyde).

Barbs, small: 1, Mr H. Ormshaw (Skipton); 2, Mr L. Leadbeter; 3, Mr R. Tomlinson (Glossop). Large: 1, Mr R. Parkes (Merseyside); 2, Mr J. Rowbottom (Hyde); 3, Mr J. Hughes (Warrington). Labors, sharks & loach: 1, Mr Kennedy (Valley); 2, Mr Froland (Merseyside); 3, Mr P. M. Howarth (Merseyside). Loaches: 1, Mr C. Backhouse; 2, Mr D. Walker; 3, Mr J. Cobb (Merseyside). Catfish, small: 1, Mr S. Berry (Valley); 2, Mr D. Charlton (Merseyside); 3, Mr L. Kaye. A.O.V. cory: 1 & 2, Mr P. Backhouse (Loynes); 3, Mr R. Davies (Belle Vue). Anabantids: 1, Mr A. Gregory (Nelson); 2 & 3, Mr D. Charlton. Fishers: 1, Mrs Lord (Valley); 2, Mr Kennedy; 3, Mr W. Finchall (Warrington). Cichlids, dwarf: 1, Mr F. Hughes (Warrington); 2, Mr F. T. Richardson (Merseyside); 3, Mr S. Hanson (Sandgrounders). Large: 1, Mr R. Dwyer (Blackpool); 2 & 3, Mr R. Rowbottom (Hyde). Angels: 1, Mrs Goppy; 2, Mr L. Leadbeter; 3, Mr T. Wyles (Heylake). Characins, small: 1, Mr G. Hutt (Valley); 2, Mr D. Charlton; 3, Mr N. West (Blackpool). Large: 1, Mr T. Richardson; 2, Mr R. Barker (Merseyside); 3, Mr J. Cobb (Merseyside). Toothcarps: 1, Mr J.

McGilly (Merseyside); 2 & 3, Mr D. Crox (Merseyside). Rishoras & daisies: 1, Mr D. Charlton; 2, Mr L. Dunne (Aldwin); 3, Mr J. Alcock (Warrington). Breeders, egg-layers: 1, Mr R. Bowen (Blackpool); 2, Mr D. Charlton; 3, Mr J. V. Hill (Aldwin). Livebearers: 1, Mr M. Burke (Merseyside); 2, Mr J. Hughes; 3, Mr S. Hanson (Sandgrounders). Parrot, egg-layers: 1, Mrs Goppy; 2, Mr F. T. Richardson (Merseyside); 3, Mr R. Lawson (Malden, Merseyside); 4, 2 & 3, Mr L. Leadbeter. A.O.V.: 1, Mr M. Berry (Valley); 2, Mr C. Backhouse; 3, Mr J. Alcock (Warrington). Jerrys: 1, Mr T. Richardson (Hyde); 2, Miss Chapman (Valley); 3, Mr Jones (Glossop Park). Ladies: 1, Mrs D. Standen (Loynes); 2, Mrs Roberts (Valley); 3, Mrs S. Mitchell (Blackpool).

Fancy goldfish: 1 & 2, Mr S. Walsh (Ayrton); 3, Mr C. Whaley (Ayrton). A.O.V. goldfish: 1 & 2, Mr L. C. Harris (Nelson); 3, Mr S. Walsh. Common goldfish: 1, Mr A. Iremson (Blackpool); 2 & 3, Mr D. Charlton.

THE meeting of the SOUTH WESTERN GROUP of the BRITISH MARINE AQUARIST ASSOCIATION held at the shop premises of Torquay Pets Corner got off to a late start as a new consignment of fishes had just arrived (included in which were some nice specimens of *Amphiprion percula*, *Chromis cyanea* and *Chromis coralina*). Plans for the future were discussed; approaches are to be made to the Torbay Divers with a view to organising another "seafair" in September. Mr Derek Drake is making the collapsible show stand for the Group to take to various shows. Congratulations were proffered to Mr G. Wardle and Mr L. Doubleday on being accepted as Members of the Marine Biological Association of the United Kingdom. Mr Doubleday announced the results of a pH reading of the water in Torbay—8.4.

WHEN MIXENDEN TFS held their return match with HUDDERSFIELD TFS it proved to be an exciting evening. From being 19 points down on the first leg, Mixenden won the second leg by 74 points to 54 to gain an overall victory by 1 point. Judge Mr A. White of Keighley made the following awards:

Livebearers: 1 & 2, Mr F. Cooke (H); 3, Mr S. Leadham (M); Barbs: 1, Mr T. Brooks (H); 2 & 3, Mr S. Leadham (M); Cichlids: 1, Mr F. Cooke; 2, Mr T. Brooks; 3, Mr Ebbel (M). Characins: 1, Mr W. Ostrowski (M); 2, Mr L. Thompson (M); 3, Mr M. Jessop (H). Anabantids: 1, Mr B. Turner (M); 2, Mr F. Douglas (M); 3, Master D. Hrough (M). Toothcarps: 1, Mr F. Cooke; 2, Mr A. Robinson (H); 3, Mr S. Leadham (M). Daisies & labors: 1, Mr W. Ostrowski; 2, Mr B. Turner (M); Catfish & loaches: 1, Mr W. Ostrowski; 2, Mr M. Jessop; 3, Mr N. R. Gibson (H). Sharks & loach: 1, Mr M. Jessop; 2, Mr N. B. Gibson; 3, Mr S. Leadham. Parrot: 1, Mr J. Brown (M); 2 & 3, Mr N. R. Gibson. Breeders: 1 & 2, Mr N. R. Gibson. A.O.V.: 1, Mr J. Brown (M); 2, Mr R. Ebbel. Corydoras: 1, Mr A. Bradby (M); 2 & 3, Mr J. Brown (M). Furcled jaws: 1 & 2, Mr R. Leadham; 3, Mr J. Brown. Best in show, Mr A. Bradby Mixenden.

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Dates for Your Diary

Dates preceded by ★ are of shows to which FBAS Championship Classes are allocated.

★15th-17th August. **PORTSMOUTH A.S.** Open Show. Portsmouth Community Centre, Teyford Avenue, Portsmouth. Fish entered 9th, judged 9th, public 7-11th. Schedule: Mr J. Stillwell, 34 Salisbury Avenue, Copnor, Portsmouth.

★6th August. **TONBRIDGE & D. A.S.** 6th Open Show. Tonbridge School, Tonbridge. Mr I. T. Mathison, 23 Norton Way, Five Oak Green, Tonbridge, Kent.

6th August. **BLACKPOOL & FYLDE A.S.** Open Show. Rialto Parade Annex, Old Grammar School, Church Street, Blackpool. Details: Mr G. Howard, 65 Standish Avenue, Blackpool; phone 41575.

9th-12th August. **CYMRU NATIONAL A.S.** Open Show. T.A. Drill Hall, Cardiff. Breeding 9th and 10th. Details: Mr B. Gwynn, 21 Gabailla Road, Llandaff North, Cardiff.

12th August. **HARLOW A.S.** Open Show. Details: Mr P. Mardock, 21 Brook Lane Field, Hatlow, Essex.

★12th August. **BRACKNELL & D. A.S.** Open Show. Pinewood Community Centre, Pinewood Court Road, Bracknell (opposite Admiral Cunningham Hotel). Schedule: Mr L. Jordan, 62 Farnham Place, Ascot. Bucks (phone) Woodfield Row 3401.

13th August. **NORTH STAFFS. A.S.** Open Show. Victoria Hall, Hasley, M.A.S. Rules. Schedule: Mr J. S. Booth, 115 Beverley Drive, Banbury, Stoke-on-Trent.

17th August. **BEDWORTH A. & P.S.** Open Show. Nicholas Chamberlaine School, Hallingdon Road, Bedworth. Schedule: Mr T. Pagen, 74 Lister Street, Attleborough, Nuneaton. Change of date.

17th-19th August. **MIDLAND OPEN SHOW (MAPS)**. Hagley Hall, Broad Street, Birmingham. Details: Mr J. Wynn, 120 Franklin Road, Kings Norton, Birmingham 30.

★19th August. **SOUTH PARK AQUATIC (STUDY) SOCIETY & KINGSTON & D. A.S.** combined Open Show. Hayn Hall, Ham Close, Richmond, Surrey. 20 classes, FBAS and GSGS standards. Schedule: Mr G. Greenhall, 29 Garth Close, Morden, Surrey; phone 01-227 4912.

20th August. **SALFORD A.S.** Open Show. Broughton Liberal Club, Great Cloves Street, Salford 7 (next door to Green Cloves St. warehouse). Details: Mr J. Lomas, 32 Birch Street, Lt. Broughton, Salford, 7, Lancs.

20th August. **OLDHAM & D. A.S.** Open Show. Werneth Park, Oldham. Details: Mr E. Birchwood, 50 Inverness Avenue, Blackley, Manchester 9.

★20th August. **PLYMOUTH B. A. & P.S.** Open Show. Plymouth Y.M.C.A. Details: Mr J. Huddle, 50 Durham Avenue, Ligon, Plymouth, Devon.

21st September. **FBAS General Assembly**. Large Hall, Conway Hall, Red Lion Square, London, W.C.1, 4.30 p.m.

★22d September. **BETHNAL GREEN A.S.** Open Show. Bethnal Green Institute, 225 Bethnal Green Road, London, E.2. FBAS Championship Trophy class O (male guppy). Schedule: Mr D. Bundy, 75 Eversham House, Old Ford Road, Bethnal Green, E.2.

22d September. **YATE & D. A.S.** Open Show. Newman Centre, Yate, Chipping Sodbury, Glos. Schedule: Mr M. Emery, 114 Sandridge Park, Yate, Bristol (phone) Chipping Sodbury 212045.



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Show Schedules etc. and all Information from the Show Organiser, PFM,

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22nd September, **BEIGATE & REDHILL** Open Show, Coulsdon Youth Centre, Chertsey Valley Road, Coulsdon, Surrey. Details: Mr J. Wood, 22 Hickman Hill, Coulsdon, Surrey.

22nd September, **LUCAS A. & P.S.** Open Show, Joseph Lucas Ltd, Gate no. 4, Spring Road, Half Green, Birmingham 26. Schedule: Mr G. H. Roberts, 29 Charles Road, Solihull, Warks.

22nd September, **WELLINGBOROUGH & D. A.S.** The Oval Hall, Wellingborough Schedule: Mr D. Buchanan, 12 George Street, Wellingborough.

22nd September, **WHITLEY BAY A.S.** Open Show, Express Ballroom, Whitley Bay, Northumberland. Show schedule: Mr R. Mallon, 88 Appleton, Gosden, Wickham Terrace, Whitley Bay, Northumberland.

22nd September, **WEYMOUTH & D. A.S.** Open Show, Small Bay Hall. Details: Mr J. R. Jones, 11 Ludlow Road, Weymouth, Dorset.

19th September, **NUNEATON A.S.** Open Show, Friars Youth Centre, Abbey Street, Nuneaton. Details: Mrs F. Dookin, 1 Grosvenor Drive, Barwell, Leicester (phone Earl Shilton 42788).

20th September, **BRIGHTON &**

SOUTHERN A.S. Open Show, The Mansion Centre, Marston Road, Howe, Sussex. Schedule: Mr C. F. Corbin, 82 Marlborough Drive, Burgess Hill, Sussex. phone 47832.

20th September, **HUDDERSFIELD TFS** Open Show, Huddersfield Town Hall, 44 Playas, Details: Mr M. Jerrard, 8 Ryedale, Kirkstall, Huddersfield.

19th-20th September, **BRISTOL AQUARISTS SOCIETY** Open Show, 39 Michaels Parish Hall, Badminton, Bristol. Details: Mr H. C. B. Thomas, 2 Grove Park, Bristol BS6 4PP.

16th September, **HAVANT & D. A.S.** Open Show, Devereux Hall, Parkbrook, Havant. Details: Mr V. B. Hunt, 128 London Road, Walsley, 22, Parnham, Havant.

17th September, **HOUSLLOW & D. A.S.** Open Show, Houslow Youth Centre, Cecil Road, Houslow.

17th September, **STONE AS** Open Show, Walton Community Centre, Stone, Staffs. MAAE Rules. Schedule: Mr K. Evans, 43 Friars Avenue, Walton, Stone, Staffs. phone Stone 3986.

17th September, **WEST CUMBERLAND A.C.** Open Show, Civic Hall, Whitehaven, Cumberland. Details: Mr J. Parker, 2

Seaford Avenue, Orpington, Epsom, Cumberland.

22nd September, **RFIONDDA A.S.** Open Show, Details: Mr M. Williams, 112 100 Trefnog, Trefnog, Rhondda, S. Wales.

23rd September, **G.S.O.M.** 1972 Open Show, Adult School, Sutton, Surrey.

14th September, **HUCKNALL & RULWELL A.S.** Open Show, Bulwell Youth Club, Coventry Road, Bulwell. Schedule: Mr G. P. Fenwick, 14 Westleigh Road, Straley, Nottingham.

14th September, **NORTHAMPTON & B. A.S.** Open Show, Drill Hall, Chase Street, Northampton. Schedule: Mr G. Allen, 80 Chiltern Avenue, Northampton.

14th September, **OSRAM A.S.** Open Show, Recreation Hall, Refuge Street, Oldham, Lancs. Details: Mr J. E. Shore, 53 Refuge St, Shaw, Oldham, Lancs.

14th September, **TORBAY A.S.** Open Show, Torquay Town Hall. Schedule: Mr J. R. Davis, 6 Burrend Close, St Marychurch, Torquay, Devon.

Continued overpage

SHOW '72

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Friday 27th

Saturday 28th

Sunday 29th October

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14th October, **EALING & D. A.S.** Open Show, Northfields Community Centre, Northcroft Road, London, W.17.

15th October, **CHESTERFIELD & D. A.S.** Open Show, Clay Cross Social Centre, Chesterfield Road, Clay Cross, 10. Chesterfield, Derbyshire. Entry 20 off M1, 4 miles to Clay Cross, following signs. Details: Mr D. Stone, 217 North Wingfield Road, Greenhouse, nr Chesterfield.

17th October, **BASS** Meeting, Fellows Lecture Hall, London Zoo, Regents Park, 9.0 p.m. All welcome. Tickets from Mr F. Rees, Highcliffe, Old Hill, Woking, Surrey.

21th October, **EAST LONDON A. & F.A.** Open Breeders Show, Ripple Road School, Barking, Essex. Booking from 8.4 p.m. 24th October—9.0 a.m. 25th Schedule from: Mr F. Vickel, 17 Irons Way, Hornford, Essex.

26th October, **BUXTON & D. A.S.** Open Show, The Pavilion Gardens, Buxton. Details to follow.

14th-15th October, **R.A.F.**, Billie Van Manchester.

19th October, **HETTON COUNTY A.S.** Open Show, Hetton Community Association Centre, South Market Street, Hetton-Le-Hole, Co. Durham. Booking 2000—2.00 p.m. Schedules: Mr R. C. A. Hine, 25 The Meadows, West Rainton, nr Mowbray-Lee Spring, Co. Durham.

21st October, **MAAS** Convention, Main speaker, Dr G. Chubb (Liverpool University Zoological Department). Details: Mr P. J. Clements, 35 Farnok Avenue, Parkside, Sturford, Staffs.

24th October, **SHERWOOD A.S.** Open Show, Rainworth Recreation Centre, Warsop Lane, Rainworth, Mansfield, Notts. Show secretary: Mr J. Luce, 25 Morris Avenue, Mansfield-Woodhouse, Notts.

27th-29th October, **THE AQUARIUM SHOW '72**, Royal Horticultural Society Old Hall, Vincent Square, London S.W.1. All details from the Organiser, 124 Garratt Lane, London SW17 6NY 124-047 28951.

28th October, **NEWCASTLE GUPPY AND LIVEBEARER SOCIETY**, Open Show Central Hall, Gosforth, Newcastle upon Tyne 2. (11 freshwater classes, 17 egg-layers). Schedules: Mr J. A. Laidler, 29 Elm Avenue, Gosforth, Newcastle upon Tyne 2.

29th November, **MIXENDEN TFS** Open Show, The Mixenden Community Centre, Cough Lane, Mixenden, Halifax. Details: Mr S. Lovell, 74 Cough Lane, Mixenden, Halifax, Yorks.

11th November, **G.B.G.B.** Quarterly Meeting, Conway Hall, Red Lion Square, Holloway London, W.C.1.

12th November, **HARTLEPOOL A.S.** Open Show, Longacre Hall, Seaton Carew Schedules: Mr J. D. Watson, 42 Seaton Road, Hartlepool, Co. Durham, TS15 1PZ.

19th November, **CRISWELL & DAS** First Open Show, Warwick Sports Centre, Valley Road, Warwick, Notts. Schedules: Mrs H. Blades, 11 Westminster Close, Warwick, Notts, Warwick CV39 59Y.

24th November, **AIREBOROUGH & DAS** Open Show, Yeasdale Town Hall, Grisle, for Leeds-Bradford Airport, show 24k for location. Schedules: The Secretary, 3 Grenier Avenue, Yeasdale, nr Leeds.

1st December, **HORSFORTH A.S.** Open Show, New Civic Hall, Bradford Road, Stansbury, Pudsey. Schedules: Miss J. Hales, 46 Wellington Road, New Wortley, Leeds 11; phone Leeds 21014.

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Continued on page 104



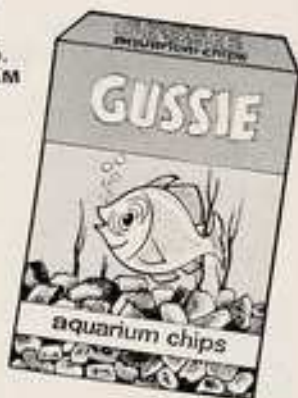
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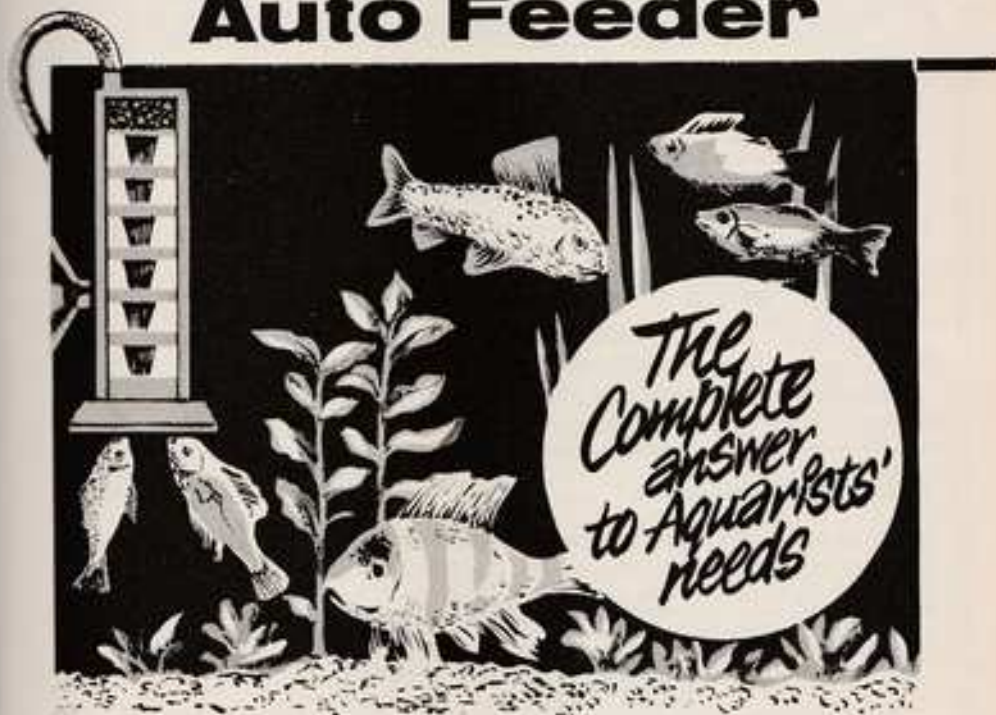
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Please note that from the 26th June 1972 the distributor for Rena equipment is changed from Aquatic Hobby (SCAN GROUP) Ltd. to


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21"	1"	12	24" to 26"	1.68
24"	1½"	20	27" to 36"	1.68
36"	1"	30	38" to 48"	1.80
48"	1½"	40	51" to 60"	2.00
*60"	1"	65/90	63" up	2.54

Ballast with Terry Clips, Starter and Leads for above sizes £2.25 complete and ready for use. Ballast units for 8 and 15 watt tubes £1.25. * Ballast for this Tube by order only

Angle Iron

	Tank	Stand	Full Cover	Hinged Cover	Plastic Coated Tank
18 x 10 x 10	£2.65	£2.73	£1.43	£1.54	£3.60
18 x 12 x 10	3.03	2.73	1.43	1.54	3.84
18 x 12 x 12	3.14	2.85	1.79	1.90	4.11
24 x 12 x 12	4.16	3.24	1.96	2.18	5.08
24 x 12 x 15	4.60	3.24	1.96	2.18	6.02
24 x 15 x 15	5.81	3.53	2.58	2.85	6.16
30 x 12 x 12	5.81	3.53	2.58	2.85	6.70
30 x 12 x 15	6.19	3.53	2.58	2.85	7.19
30 x 15 x 15	6.87	3.96	2.69	2.96	8.23
36 x 12 x 12	7.11	3.65	3.07	3.25	8.26
36 x 12 x 15	7.69	3.65	3.07	3.25	9.33
36 x 15 x 15	9.26	4.04	3.42	3.69	11.71
48 x 12 x 12	8.32	5.08	4.17	4.45	10.56
48 x 12 x 15	9.63	5.08	4.17	4.45	11.24
48 x 15 x 15	11.42	6.15	4.31	5.70	12.64

Verbro plastic frame

	Tank	Stand	Cover with Flap	Cover with-out Flap
18 x 10 x 10	£4.52	£5.16	£2.52	£1.45
18 x 10 x 12	4.84	5.16	2.81	1.61
18 x 12 x 12	5.32	5.16	3.01	1.61
24 x 12 x 12	5.48	5.32	3.22	1.93
24 x 12 x 15	5.80	5.32	3.23	1.93
30 x 12 x 12	6.77	5.64	3.62	2.17
36 x 12 x 12	8.15	6.04	4.51	2.58
36 x 12 x 15	8.70	6.04	4.51	2.58
36 x 15 x 15	12.77	6.28	5.23	2.74
48 x 12 x 12	10.88	6.45	5.92	2.85
48 x 15 x 15	15.84	6.75	6.52	3.45

Aqua-Lite

Bahama 24 x 12 x 12	£8.87
Atlantic 16 x 8	£4.87

Tachbrook Butterfly

Complete set-up: tank, stand and cover	
36 x 15 x 12	£18.26

Hyware Aquarium

		Stand
Bermuda 18" Bow	£3.77	£4.22
Tahiti 24" Bow	5.45	4.60
Caribbean Bow	23.69	7.50

Any size of tank and stand made to your own specifications—quotations given on request.

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SHIRLEY AQUATICS LTD

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PLEASE NOTE—All enquiries requiring a reply MUST be accompanied by S.A.E. Our premises are situated on the main Stratford-Birmingham road, 8 miles from Birmingham. Midland "Red" Bus No. 150 from Bus Station, Birmingham, passes the door, 41/42 at "The Crown," Monkspath.

HOURS OF BUSINESS—NOVEMBER-MARCH 10 a.m.-5 p.m. APRIL-OCTOBER 10 a.m.-6 p.m.

CLOSED ALL DAY SUNDAY AND MONDAY

TERMS OF BUSINESS—Cash with order please. Fish sent by rail. Tropical minimum order £7.50, insulated container and carriage £1.50. Cold water minimum order £5 plus £1.25 cart and carriage. Plants by post (minimum order £0.50) please add £0.25 post and packing.

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