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JULY 1965

MONTHLY
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The Flame Tetra

by A. W. SKINNER

ALTHOUGH the fish mainly bred by us are barbs and angels, we have for the past 3 years been breeding the glowlight tetra (*Hemigrammus erythrozonus*) quite successfully. It has been a thrill for us each time a batch of glowlights were raised and as the tetras are such a delightful little fish we thought maybe we would try another type.

An opportunity soon arose when a fellow member of our aquarist society called to ask if we would like to have a pair of flame tetras (*Hyphessobrycon flammeus*) which he thought were ready for spawning. He himself did not have the room for breeding; may I mention here that one of the advantages in belonging to a society is that there is always someone ready to help you out, either with fish or a word of wisdom.

After quarantining the pair of fish for a fortnight in one of our all-glass tanks specially kept for this purpose, the male and female were then separated for 2 weeks' conditioning, during which time they were given plenty of *Daphnia*, white worm, chopped liver, roe, spinach and dried food. After this period the female looked really well rounded and the male was in beautiful colour. One could certainly see where the name of flame had come from.

As the fish seemed ready for spawning, I then prepared the breeding tank, which was 18 in. by 10 in. by 10 in. I washed it well in salt water, being careful to rinse it thoroughly in cold water under a running tap. Then the bottom of the tank was covered with a layer of gravel and small stones, which had been boiled, then filled with two parts of tap water and one part of aquarium water, taken from one of the conditioning tanks. (As our tap water is soft we did not have to add anything to it.) Spawning medium used was nylon mops and a little floating plant (Indian fern), making sure there were no snails or snail eggs on the plant; temperature was 80° F (26° C).

The tank was left empty for 2 days and on the evening of the second day the fish were introduced, first the female and then the male. When the fish appeared settled, the fish-house lights were switched off and we hoped to see them spawn the following morning.

Next day they did not seem to want to co-operate at all and although frequent visits were made by us to see if they were spawning they were just not interested.

About 8.00 p.m. my wife went to put the light on in the fish-house and casually glancing at the tank was quite

amazed to see the fish merrily spawning away. She was worried that they had been disturbed, but they were still spawning when I arrived home from work at 9.15 p.m.

The spawning procedure absolutely fascinated us. The fish would swim around together, then suddenly they went to the top around the floating plant, where they would suddenly spin round and round each other, the female releasing quite a large number of eggs, which were fertilised by the male.

This continued for about 2 hours, with the intervals between the spawning growing longer. We then took the fish out of the tank and put them back into the conditioning tanks. Throughout the spawning the female lost all her colour and, in fact, during later spawnings of these fish this was one of the easiest ways of telling that they had actually settled down to spawn.

As soon as the adult fish were moved from the tank, it was covered with newspaper to keep the light away from the eggs. We follow this procedure with any eggs we try to hatch out. It does seem to be the best idea with the tetras to leave the tank covered for, say, 3 days, by which time the baby fish could be seen hanging on the glass sides of the tank. A small amount of egg yolk was added at this time and then, in another 2 days when the fry had moved off the glass, we fed with egg yolk three times a day.

After another week I tried some brine shrimps in the tank and was pleased to see the little fry swimming around looking ready to burst. It is very difficult to spot the fry until they are 2 or 3 weeks old as they dart against the glass sides of the tank at the least movement, but as long as there are a few to be seen the rest are there somewhere.

By the time the youngsters are a month old, they should be able to take sifted *Daphnia* and Grindal worm, fine dried food etc. They still seem to appreciate the egg yolk about once a day as well.

Our first batch of flame tetras were moved into a larger tank (36 in. by 15 in. by 12 in.) at 4 weeks old and in another 4 weeks were just coming into some colour and were now feeding on anything put in the tank, which included *Daphnia*, white worm, roe, liver, peas, spinach, dried food and still a little egg yolk occasionally.

Since this we have had about six batches of young flames and each spawning has been more or less identical.

It has been suggested that it would be best to use two males to one female when spawning the flame and as there appear to be quite a number of eggs not fertilised, this may be the answer. As we grew up some of the first batch of fish we shall now be able to experiment further along these lines with, we hope, even better results than already achieved.

If there are any aquarists who feel tempted to try and breed tetras we can well recommend the lively and colourful flame, knowing that you will be both pleased and proud with the results.

Metynnis schreitmuelleri

by JACK HEMS

METYNNIS SCHREITMUELLERI, a strikingly beautiful species from the Amazon Basin, is a member of the family Characidae, and attains a length of about 6 in. Clear, soft, well-oxygenated water having a neutral to acid reaction, and a temperature of about 75°F (24°C) to 80°F (27°C) suits it best. Its body is pancake-thin, with a notched or serrated belly, and almost circular in shape. The general colour is brilliant silver overcast here and there, but more especially on the flanks, with a delicate brassy green to steely blue sheen. The long-based anal fin, which is noticeably fuller in the male than in the female (only, of course, in well-grown fish) is brick red anteriorly and along most of the outer margin. The other fins are more or less colourless. It is closely related to the similar-shaped piranhas (*Serrasalmo*)—the most savage fishes found in tropical fresh waters, but unlike them is quite peaceful.

M. schreitmuelleri should always be kept in a group of four or more because it is happiest when it can enjoy the company of, and shoal with, its own kind. It is an active fish and, given a congenial environment and large helpings of food—but not so large as to leave any to spoil on the compost—lives a long time. Speaking of food, all live or dried foods are eaten with relish, but the fish is largely herbivorous and needs plenty of tender greenstuff included in its diet if it is to look its best. In point of fact, if it is not given such things as duckweed, nitella, lettuce, cooked spinach, cooked nettles and so forth daily, even a single specimen will sometimes strip a thickly planted 24 in. by 12 in. aquarium of most of its vegetation within the space of a week.

Although *M. schreitmuelleri* was known to pioneer tropical aquarists (in Germany) before the outbreak of World War 1, there are only two or three records of its being bred in captivity. From all accounts the spawning procedure is as follows: after some chasing about the aquarium, the two sexes take up a side-by-side position on the sandy bottom, and there deposit as many as 2,000 largish, non-adhesive eggs. These the parent fish neither watch over nor eat. At a temperature in the low eighties (°F) the eggs incubate in about 3 days and 3 or 4 days later the fry become free-swimming. Thenceforward, with proper feeding, they make rapid progress.

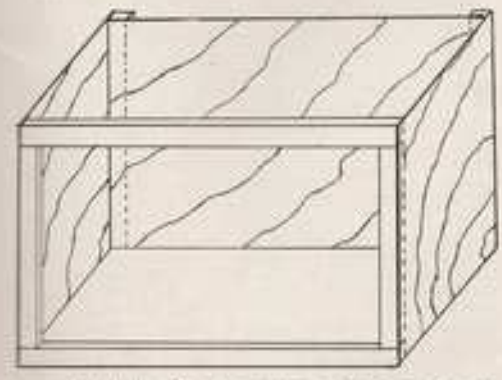
A Modest Start With Marines

by A. J. McLEAN

IF you would like to begin with marines on a modest scale and you live within half a day's journey of an unpolluted rocky sea shore, why not try keeping sea anemones? I say 'if you live within a reasonable distance of the sea', because half the fun of having a tank of anemones is derived from being able to say exactly where they came from. On the other hand, if you prefer to let someone else do the collecting, anemones have been advertised for sale in *The Aquarist*.

First of all, for those who are a little vague about what exactly a sea anemone is, here are a few words of explanation. If you are already familiar with them, well, you need not bother to read the next two paragraphs.

Although, as their name implies, sea anemones look rather like flowers, they are in fact animals and together with jellyfish, hydroids, corals etc. belong to the phylum Coelenterata. There are many different genera of sea anemones common between the high and low tide marks around our coasts but, although they vary considerably in colour, size and shape, they are all of the same general type of structure. The body, when the creature is extended, forms a roughly cylindrical column, varying in length between only a fraction of an inch and 6, or sometimes more, inches. The base of this is invariably attached to a rock, pier pile or some other comparatively immovable object. At the centre of the upper end is a mouth fringed with tentacles, the latter being used by the anemone to capture and partially kill its prey.



Removable black-out for the aquarium. Sides and back are plywood on 1½ in. by ¾ in. corner strips of wood, which also form the front frame. Woodwork is glued and pinned with panel pins

When the anemone closes up, which is often the case when it is touched or uncovered by the tide, the tentacles withdraw and the animal contracts into an irregularly shaped blob of jelly. One exception to the rule is the snakelocks anemone (*Anemonia sulcata*), which is unable to draw in its long tentacles.

An invaluable beginners' guide to anemone identification, and indeed to all our common sea shore creatures visible to the naked eye, is *Collins Pocket Guide to the Sea Shore* by J. Barrett and C. M. Yonge. With the help of this book it is possible to give names to at least the more identifiable anemones. For the more academically inclined, the standard work on the subject is T. A. Stephanson's *British Sea Anemones*, published in two volumes by the Ray Society.

Tank for Anemones

But what of keeping sea anemones? First the tank. Salt water has a highly corrosive effect upon certain metals and in many cases when it comes into contact with them it produces a solution poisonous enough to kill sea creatures. Thus, although the ordinary angle-iron aquarium can be effectively treated with bituminous paint (Bituros, for example), I have found it is easier to obtain a tank which is more or less made for the job. All glass and all plastic tanks are perfectly satisfactory but they seem to be limited in size, or alternatively very expensive, and I have found that so far the ideal tank for my requirements has a nylon-coated frame and measures 24 in. by 12 in. by 15 in.

The tank should be blacked out on three sides as most anemones seem to dislike too much light. Black-out can be achieved by painting the sides of the tank but I think that the job can be done more neatly by using plywood fastened together in the manner shown in the diagram. When completed this can be painted with any colour which will make a suitable background to the rockwork which will be added later. In this way the tank itself is not spoilt and the streaky effect so often obtained when painting on glass is avoided.

Aeration and good water circulation in my anemone tank are dependent upon an air pump, which, apart from odd breathers of about half an hour or so when I remember to switch off, is kept running continuously. The plastic air line (rubber and salt water do not go well together) from the pump is divided at a T junction not far from the tank. At this point one tube runs to an ordinary diffuser stone and the other is connected to the air lift of an under-gravel filter. The latter not only keeps the water perfectly clear but also makes it possible to cover the tank floor with a thick layer of gravel without the appearance of black deposits. This layer of gravel is from 2 to 3 inches deep,

a factor which enables me to keep, in their accustomed surroundings, those anemones which normally have their columns buried and their tentacles flush with the gravel surface. To offer suitable sites for the majority of anemones, however, plenty of rockwork has been provided.

Although I live only 3 miles from the sea shore, finding suitable containers and transporting sufficient sea water to fill my aquarium presented quite a problem. In the end I found it easier to use Meersalts, a 4 lb. bag of which, when dissolved in ordinary tap water according to the instructions on the pack, produces 10 gallons of sea water. The only accessory necessary in the process was a hydrometer and with the aid of this inexpensive instrument I made up the salt water to a density of about 1.023, although any figure between 1.021 and 1.025 seems to be equally satisfactory. Once the salt water is in the tank I make periodic checks to ensure that the density remains within this range. Any major increase in the hydrometer reading can easily be rectified by the addition of tap water until the required density is restored.

At present the tank is covered by a piece of glass resting upon four corks placed one at each corner of the top frame. This keeps out the dust but drops of water tend to collect on the underside of the glass and some of these run towards the outer edges where they drip on the aquarium frame. This is no great problem as the water can easily be wiped off but it is highly probable that readers can think of much better arrangements—but remember to avoid metal.

Collecting

Once the tank is ready for its occupants the real fun begins and finding anemones can be as satisfying as keeping them alive and healthy afterwards. Any rocky sea shore in Britain which is unpolluted will offer a selection of sea anemones but the south west of England is one of the most profitable hunting grounds.

Once you have decided where you are going to search for anemones, consult the local tide tables. These are given in the local newspapers of most sea-side towns and show the time and height of high tide. If you can arrive at the beach about 3 hours after this, you can follow the tide out over the lowest part of the shore, which is the best collecting ground. It is always easiest and often safest to follow the tide out to this point rather than to let it drive you back. Spring tides (nothing to do with the season) are the best times for collecting for it is then that the ebb tide uncovers parts of the lower shore which are normally under water. These tides occur every fortnight about the times of the full and new moon.

Whenever I go in search of anemones I find three things invaluable. These are plenty of small plastic bags, a rucksack to carry them in, and an old garden trowel. Water-tight bags are in every respect better containers than jars but their chief advantage is the fact that they don't break if you slip while scrambling over wet rocks. The trowel is useful for prising anemones off the rocks and digging out those where the columns are buried in mud.

Once you have arrived at your selected collecting ground, search carefully on stones, under stones, under weeds and overhangs, and in pools. Incidentally, if you turn stones over, remember to put them back as many shore animals soon die when exposed to sun and wind. Follow the tide out but watch for it turning, especially if there is any possibility of being cut off.

The plumose or powder-puff anemone (Metridium senile) occurs at the lowest tide line. It is shown here contracted and expanded

The first anemone liable to be encountered is the beadlet (*Actinia equina*). These anemones may be brown, red, orange or green but they are easily identified by a ring of 24 bright blue spots inside the top margin of the column. If you want to take one home, gently prise the base of the anemone from the stone to which it is attached. Once a start has been made the rest is easy.

But there are more interesting species than the beadlet. Some are difficult to identify but nearer the low tide level the easily distinguished dahlia anemones (*Tealia felina*) may be found. These are much larger than the beadlets and also harder to remove from their positions. Careful prising with the trowel, however, usually does the trick.

Presenting a more difficult problem is *Cereus pedunculatus* —no common name I'm afraid, which may be buried in muddy gravel, except for the attractively coloured tentacles opening flush with the surface. Here the trowel comes in handy but try not to disturb the mud too much or the anemone will disappear under a smoke-(or should I say a mud-) screen and may be difficult to locate. Be careful too not to touch the anemone too roughly or it will vanish below the surface of the mud and again prove hard to find again. The base will usually be found to be attached to a stone or shell some 3 inches deep and again must be prised off. If you find a sausage shaped object in the mud

where there was once an attractive anemone, don't be put off, that's what you are looking for and it will open up again in the aquarium.

As you collect your anemones, put them into the polythene bags with plenty of damp seaweed and a drop of water. Just enough water is required to keep things moist. As long as the seaweed is damp the anemones will not come to any harm for a few hours. They seem to survive better in this way than they do when completely submerged in water which cannot be aerated in transit.

Once the anemones arrive at their destination they can be transferred to the tank which has been prepared for them. Arrange them as you wish on the level or slightly sloping surfaces of the rocks and don't have the aeration working too violently at first. This will give the anemones time to fix themselves to the rocks. If the anemones have any other ideas about their position they will move to a more favourable site. If this is hidden from view or on the glass front of the tank, you can try other positions until eventually there is mutual agreement between you and the wanderer. Once the anemones are settled they will rarely move again from their chosen place.

Cerius pedunculatus can be partially buried at the foot of a rock and it will do the rest itself. If you can put the anemones in places similar to those in which they were found you will have little trouble.

Most anemones settle down within 24 hours and after this they seem to prefer plenty of water movement. Any of your captives which remain unopened or look sickly after a day or so are best removed to a spare tank, for instance a large goldfish bowl with an air stone and half filled with sea water. Here fatality will cause no difficulties and if your patient improves it can be returned to the anemone tank. On the whole, however, anemones are very hardy and deaths are rare.

Feeding

Feeding presents few problems as most species accept bits of uncooked shellfish, small or chopped worms, little pieces of raw meat, or in fact anything of this nature. The food should be dropped gently on the open tentacles and the anemone will either transfer it to its mouth or discard it. In the latter case the offending morsel can be removed to avoid pollution in the tank. Some books recommend feeding as infrequently as once a week but I have found that feeding with small amounts every other day is more satisfactory.

Occasionally anemones slough their skins or pieces of waste matter accumulate around their bases. These can be siphoned away but watch the tentacles if you are sucking through a tube—lips are delicate, and sensitive parts of the body are susceptible to the stinging barbs of some anemones. An occasional agitation of the water in the tank also helps to remove these waste materials which can then be siphoned out of the aquarium.

Anemones seem to be able to withstand the cold rather than warmth, so don't keep their tank in a warm room. They also thrive better if some of the water in their tank, about one-tenth, is changed each month or so, although whether the new water is natural or artificial salt water does not seem to matter.

In fact, keeping sea anemones is an easy introduction to the field of marine aquaria, so why not try it?

Can You Make a Good Catch?

by PETER E. PAVEY

NO aquarist can afford a bad catch. For a clumsy netting can mean at least uprooted plants, and at worst a stunned or injured fish. If the fish you are after starts a panic-stricken scurry round the aquarium, leave it for a while and try again when the fish has calmed down. Never net two fish together.

Keep several nets of varying sizes. These you can make yourself quite simply by stitching nylon curtain netting on to frames of galvanised iron wire. Use a biggish net for fast swimmers, a smallish one for rarely-in-a-hurry fishes.

Bend the handle of the net you use for middle-water swimmers so that, having enveloped your fish, you can bring the mouth of the net flat against the glass. A faint tap of your finger on the outside of the glass will send the fish deep into the net. Then swiftly, surely, up and out with it. If you do not do this, as you lift the net the fish will swim quickly away up the glass, and you will have to start all over again. Angels in particular are best caught in this way, for when frightened they stun themselves so easily.

A loach is more easily driven, by means of a gently nudging rod, into a net than chased. Not poked or jabbed mind! And make sure the net used is of finest mesh. A kuhli loach will wriggle in a twinkling through a hole you will have difficulty in finding afterwards. I have seen a spiny eel, one of the most awkward fish to catch, neatly trapped between two nets. But the nets must be held firmly together as the fish is lifted.

Butterfly fish, I find, are better lifted out in a jar than netted, and one's other hand held over the top to prevent any sudden leaps. Neither of my own butterflies has ever tried to jump when being moved, but one of them did develop mouth fungus after being clumsily netted. Not by me. It was possible even, in final desperation, first to cut, and then to pull away the deadly white beard successfully with tweezers, still without netting the fish.

Gravid fish, if they must be transferred to another tank, are best moved in a net suspended in a jar of water, rather than by net alone. I have never lost gravid females—or had deformed young—moving them in this way. And baby livebearers, up to a quarter of an inch in size, are easily and probably more safely moved in a cup than in a net.

A catfish, though a tricky customer, is well and truly yours once it is in your net, for as you lift the net, the cat will dive naturally downwards. Get to know the natural reactions of your fishes. It simplifies catching them enormously.

As you lift the net out of your tank, cup your other hand gently about the body of the fish, or, if the fish is a small one, completely enfold it in the net, as in a ball. This will prevent your fish indulging in any of those hair-raising leaps, and save you a frantic search on the floor!

AQUARIST'S Notebook

by P. M. FULLER

FORGIVE me if this month's "Notebook" is somewhat Grecian in flavour, but I am at present travelling in that country and have encountered many topics of interest to aquarists. But first an item concerned with an event before I left England.

On making a routine tour of my tanks one evening I was alarmed to find my natterjack toad in an apparently moribund condition: its mouth was wide open and its whole body was in a tangle of mucus. It was not until I had removed it from the tank that I realised what had happened. The toad had spawned and attempted to swallow the infertile strands, but had become completely entangled in the process. I would be interested to know whether an attempt to devour their own spawn is a usual occurrence with amphibians, as it is with fishes, or whether it is restricted to single specimens whose spawn would otherwise merely stagnate.

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One interesting feature of Greece is the variety of reptiles and amphibians one encounters in the most unexpected places. In the famous Ceramicus cemetery in Athens, where the great were once buried, frogs now leap in profusion; in Delphi, sanctuary of the great god Apollo, little snakes slip across the ruins, and everywhere where there are stones and sun basking lizards are seen. Along the roadside there are rustles and splashes as lizards and frogs hurry out of the way of the approaching danger. This abundance of animal life is quite unlike anything encountered in Britain, where one has to hunt for single specimens.

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Naturally, the paradise of reptiles and amphibians encourages collectors, and the first people I met in Greece were a young taxidermist and an old snake hunter travelling from Vienna to trap and study fishes and reptiles. The taxidermist spoke enthusiastically of capturing barracudas, which he maintained existed in thousands in the coastal environs of Thessaloniki. I haven't come across any barracudas yet, but perhaps the taxidermist has.

However, even as I write I can easily count eight distinct species of fishes swimming close to the harbour wall at Nafilion in the east of Argolis. No doubt when I start collecting, as I hope to do shortly, I shall find countless other species, for there is an even greater abundance of fishes than of reptiles and amphibians.

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It is not surprising therefore that fishes and aquatic animals generally at one time held particular fascination for the people of this land. In classical Greek vase painting, however, fishes appear only a limited number of times: it is to the prehistoric epoch that one has to turn to find aquatic animals constantly reproduced.

In Minoan vase-painting, the product of the famous civilisation of prehistoric Crete, octopuses, cuttlefishes, squids and fishes of several distinguishable species are used to create fantastic submarine patterns, the graceful curves of the various sea creatures harmonising wonderfully with the shapes of the vases. Over and over again the Minoans employed these themes—and in the process created many wonderful works of art.

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Reptiles in classical Greek sculpture are represented perhaps more frequently than fishes on vases. The symbol of Asclepius, god of healing, was a snake—and all representations of the god include the snake (as do the insignia of various medical organisations, such as the R.A.M.C., in Britain). The sole example of a lizard in Greek sculpture that I have come across is "Apollo, the lizard slayer", by Praxiteles, which is now not in Greece at all, but housed in Italy. It depicts a young Apollo, about to strike a lizard dead with a stone.

Despite the abundance of fishes in the seas and rivers and the quantities of reptiles that may be found, the hobbies of aquarium and vivarium keeping are rarely to be encountered. In fact the only aquarium I have seen anywhere was a rather diminutive decoration in a shop window containing two drab coldwater specimens. Public aquariums are rarer, and on the mainland of Greece I have heard of none. However, on the island of Rhodes an aquarium of some reputation does exist and it is my intention to see it when I visit that island. The reason is, I think, a simple one. Aquarium keeping is a luxury—as are public aquariums—embellishments which Greece can ill afford, despite favourable conditions, when the poverty of the country is such that she cannot even properly maintain her ancient monuments.

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To the Early Christian Church in Greece the word "fish" had mystical associations, because the letters which form the Greek word were the initial letters of a religious saying—thus one frequently finds the fish represented on early christian remains. But to the modern Greek the fish means one thing and one thing only—food. One is offered many species of fishes done in many delicious ways, and even if the hobby of aquarium keeping is non-existent, and the fish is no longer represented in the arts of the country—this at least is some compensation!

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It was one of my hopes when I set out for Greece to find specimens of the Greek tortoise—so common in captivity in Britain—alive and free in the wild. As yet I have been unsuccessful, perhaps because I have not looked hard enough in the right places. The nearest I have got to finding them is on several occasions encountering flattened specimens on the roadside, as hedgehogs can be seen in England. However, I have been admirably rewarded in looking for other animals—and it is always comforting to know when looking for reptiles in Greece that of all the many species of snakes that are to be found only one is poisonous.

ABOUT THE POND THIS MONTH

Water Plants can become too Rampant

by

A. BOARDER

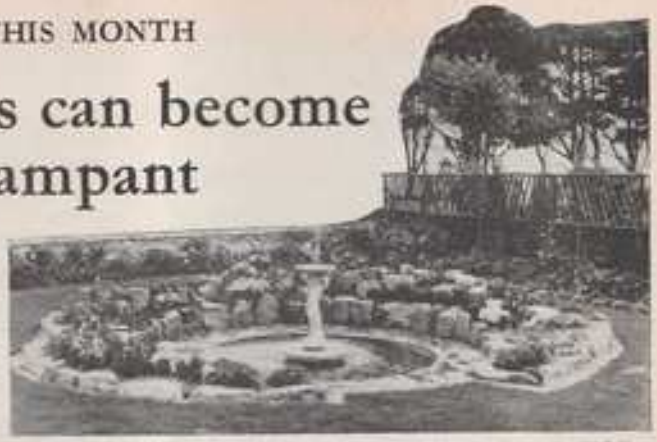

Photo: W. J. Howat

WATER plants in the garden pond should be making vigorous growth during the warmer months of the year. It may be necessary to prune some of them to ensure that they do not get too rampant and take up too much space. It is not always easy to keep a good balance so that there is enough plant life to maintain a clear water and yet not so much that there is no free space in which the fishes can swim around.

Plenty of plants growing well means that the water will be more likely to remain clear and the free floating green algae will not be able to get established. The under-water or oxygenating plants are the ones which are important for this purpose. Usually all types of these plants grow vigorously, as they are never lacking in water as are the ordinary plants in the garden. However, it is possible for the under-water plants to get so thick that the fishes are unable to swim about and be seen in the pond. This state of affairs may be healthy for the fishes but it can be disappointing for the pondkeeper.

Thinning Out

Any of the under-water plants that are too thick should be thinned out. Those left behind may look a bit sad for a time but they will soon recover and make fresh growth. Water lilies may also get too rampant, but it is not easy to deal with these at this time of the year. Any lilies which had become too large should have been pruned in the early part of the year, April or early May. When a water lily gets so large that the leaves take up all the surface of the pond the fishes may never be seen at all and a great deal of the beauty of the pond will be lost. Some of the larger outside leaves can be removed, with care. Make sure that no flower buds are damaged while this is being done.

Often it is the fault of the pondkeeper that the lilies become too rampant. If a large growing type has been planted in a small pond it is certain that before long it will get too big for the space and overcrowd everything else there. The ideal sized lily is one which when at its maximum growth covers only about half of the surface of the water. If it is too large then instead of the leaves lying spread out on the top of the water, they will be unable to find space and so will grow up into the air and look anything but attractive.

Other water plants may also be too rampant: such plants as *Pontaderia cordata* and *Sagittaria japonica* can soon spread and need thinning out. The reeds can also grow so vigorously as to need dividing. Very often any pond under 3 years old will function very well as far as plants are concerned. After that time many plants may form such masses that the pond can lose the previous attractiveness.

Duckweed growing on the surface of the pond can quickly become too thick and will need attention. This weed is splendid for shading out the sun from a freshly constructed pond as it tends to restrain the growth of the green algae. If it gets too thick it will cover the whole surface of the water and become a nuisance. It is quite easily removed. If a strong jet of water from a hose is played on it from one side of the pond it is possible to roll it across to the other side. It can then be raked out without much trouble.

If there is a bog garden running around the pond the plants there can also need attention. Some of them can spread over into the water, and while it does not matter if a small amount spreads, excessive overhanging growth must not be allowed or the water might become polluted. Some of the bog plants are not intended to grow in the water but just in a very damp place. It is a very good plan to surround most of the pond with a bog garden as if it is continually wet it tends to deter cats from fishing there. However, it also makes it difficult for the pond-owner to get to the water when necessary.

Pond Watching After Dark

During the warmer months of the year it is an excellent plan to make an evening visit to the pond about twice a week. Wait until it is dark and then go quietly to the pond with a hand torch. It will be surprising if some pests are not seen at this time of the day. Many lie very quietly well down in the water whilst it is daylight only to emerge when it is dark in search of their prey. With the aid of the torch and a net it is possible to catch many pests. The larvae of dragonflies and water beetles will often be seen near the surface, when it is so easy to catch and destroy them. Another pest which can be dangerous to small fishes is the water boatman. During the day it is no easy task to catch these pests but at night they can be seen hanging from the top film of the water. Another dangerous one is the leech. These also come near the surface at night and so can be captured then. If a pond-keeper has never examined his pond at night he will be in for a surprise when he eventually does do so.

The fishes in the pond will be eating well as long as the

Photo: W. J. Howes

A hardy and beautiful perennial aquatic plant that grows strongly in shallow water is Pontederia cordata

water is in good condition and contains plenty of oxygen. It must be remembered that there is always a certain amount of food in the pond which is natural for the fishes and they are not likely to be in need of artificial feeding unless the pond is either over-stocked or has insufficient water plant life. To test whether the fishes are hungry or not a small piece of dry brown bread can be thrown on the water. If the fishes make no attempt to take this bread do not give any more food for a day or two. If the fishes soon go for the bread, then some ordinary food can be given. If this is always offered at the same spot the fishes will soon learn to come there for food and it will be possible to see whether this food has been cleared up or not. Make sure that you do not give any dried foods if the fishes are not eating well.

Live foods are always better to offer when in doubt, but a varied diet is generally the best for most types of pond fish. If the fishes have spawned it is probable that an extra amount of food will be appreciated and should be given as long as the fishes are in an active and healthy condition.

If any young fishes are seen in the pond it may be as well to catch them and rear them in safety elsewhere, particularly if they are from a good strain of goldfish. If the pond contains plenty of water plant life and the fishes have spawned it is probable that a few fry will have escaped the attentions of the parent fishes. These can be left as if they have grown large enough to be noticed it is possible that they will be able to survive.

The question often arises as to what is a safe size for goldfish to go through the winter out of doors. I do not think that this depends so much on the size of the fry as on the purity of the water. I have had very small fantail goldfish go safely through the winter in outdoor tanks. This has only been because the water has been in good condition. If the water is at all foul it is certain that if the water freezes over the foul gases trapped underneath will be dangerous to small fishes, in fact to fishes of any size. If young goldfish are to be wintered out of doors make sure that the tank has been cleaned out and that it contains only pure water. There need not be much plant life in the tank. If it has a good surface area it is probable that the water will get sufficient oxygen from the atmosphere; oxygenation by the plants in winter is not a very reliable event since many water plants become quite dormant during the cold weather and may indeed foul the water instead of oxygenating it.

Transporting Tropical Fishes

by B. WHITESIDE

FOR the aquarist who lives a long way from his nearest tropical fish dealer the problem of how to transport fishes arises. The usual polythene bag is no longer suitable and a suitable substitute has to be found. The problem is often solved by making some sort of an insulated wooden container in which is placed a glass jar. For the aquarist who has not the time or the tools to build such a container a useful and efficient substitute is an ordinary 2 pint vacuum flask.

Such a flask may not look very large at first view but for transporting small tropical fishes it is invaluable. Up to eight or more tropical fishes can easily be transported over fairly long distances. The smaller the fish, the more can be transported, but for larger fishes the neck of such a container is too small to permit their entry without damage.

A 2 pint flask will retain the original temperature long enough to transport fishes for a number of hours and the water capacity will contain enough oxygen for the period. To make sure that the water remains at the proper temperature, the flask should be rinsed out with water of the required temperature at the dealer's shop, before the water for actual transportation is added. This will ensure that no drop in temperature arises because of the difference in temperature of the inside of the flask and the water added. A piece of grease-proof paper placed round the cork will prevent it from coming into contact with the water and will ensure a better seal at the mouth of the container. The flask should only be filled about three-quarters full to permit a quantity of air to remain at the water surface.

If the flask is well washed out after each purchase there is no reason why it should not be used for its normal purpose of keeping drinking beverages hot or cold.

Being relatively small in size a flask full of fishes can easily be slipped into a brief case or a small travelling "grip", this making it unobtrusive and easily carried. A 2 pint flask is not very expensive and can give many years of service as a fish transporter or for picnic beverages if care is taken not to let water get inside the metal casing, which can result in rusting.

HOUSE PLANTS FOR THE FISH HOUSE

The Flame Nettle

(Coleus)

COLEUS are very ornamental plants with leaves which are nettle shaped and grow in a variety of colours. They should be grown from seeds sown in spring in a temperature of 75°F (24°C). The seedlings are potted on firmly in a good compost and as the young plants develop they can have the growing tip pinched out to produce a bushy plant.

Coleus is grown for its leaves and any flowers which are produced should be removed to prevent the plant from wasting its energy on seed production. The plants require frequent watering and a spoonful of liquid fertiliser added to the water twice a week will produce strong brightly coloured plants.

A position in full sun is what the plants require and this will also enable full advantage to be taken of the bright hues of the leaves. More plants can be grown from cuttings taken from a mature specimen. Plants will survive the winter in a temperature of 45-55°F (7-13°C).

B. Whiteside

OUR EXPERTS' ANSWERS TO TROPICAL FISH-KEEPING QUERIES

Many queries from readers of The Aquarist are answered by post each month, all aspects of the fancy being covered. Not all queries and answers can be published, and a stamped self-addressed envelope should be sent so that a direct reply can be given.

Please tell me how to set about obtaining a culture of Infusoria to feed to my fry.

Into three or four pint-sized glass jars introduce a closed handful of wilted lettuce leaves, or one over-ripe banana skin, or a thickish slice of raw potato, and fill up with warm water, preferably taken from an established aquarium. Now place the jars, shaded from strong light, in some spot where the temperature stays around 70°F (21°C), and leave them undisturbed for at least 5 days. Don't be dismayed by a temporary cloudiness and slight unpleasant smell. Both are caused by the growth of bacteria. The infusorians arrive later (from air-borne spores) and take over from the bacteria, which they feed on. As they clear the bacteria, so it follows that they clear the water and the smell. It is then, if you hold one of the jars up to a strong light, you will see, sometimes with the unaided eye, countless numbers of infusorians moving about in the water.

I would appreciate some information on the fish called Hasselt's barb.

Hasselt's barb, or *Ostenobilus hasselti*, was first introduced to tropical fishkeepers in 1931. It is native to Thailand, and many of the islands which make up the Malay Archipelago. In the wild it sometimes exceeds 12 in. in length. It is quite amenable to aquarium life provided that it is given plenty of swimming space in well-oxygenated water. A temperature of about 75°F (24°C), with a range of 5°F either way, suits it best. In the matter of food, almost anything is eaten, including vegetable matter. Young fish are more attractively coloured than adults. So far as we know, the species has not bred in captivity.

Would you please tell me how to keep and breed a small, shiny-scaled fish which I bought under the name of Persian pearl fish?

The fish you have is probably a member of the genus *Aphanius*—in all probability *A. dispar* or *A. mento*. Plenty of feathery-foliaged plants growing at or near the surface, a level teaspoonful of sea salt to every gallon of water in the tank, and a temperature range of 68°F (20°C) to 78°F (26°C) are its basic requirements. *Aphanius* spp. will usually eat dried foods, but plenty of small live food such as gnat larvae, *Daphnia* and white worms are necessary to keep the fish in good health. Scrapings of mossy algae, or a substitute green food such as cooked spinach, should also be included in the diet. No special preparations are needed for breeding. Spawning time is heralded by the enhancement of the fish's colours and distension of the female's sides. Though the adhesive eggs deposited in the plants, and the fry that hatch out in about 10 days, are seldom molested, it is recommended that the parent fish are transferred to another aquarium after spawning is over.

Please give me the names of a few easily-grown, fry sheltering plants ideally suited to a shallow-water tank in which I intend to breed *Hemigrammus ocellifer*.

You cannot do better than choose from any of the following: *Vesicularia dubyana*, *Nitella flexilis*, *Utricularia gibba*, or a warm water-grown hornwort (*Ceratophyllum*).

I introduced a pair of dwarf gouramis into a small tank housing some neon tetras. The latter contracted 'neon tetra disease', and have since died. Do you think I should place the gouramis (which look perfectly healthy at the present writing) in a medicated bath as a precautionary measure?

We very much doubt that your gouramis will develop

the same disease that killed the neon tetras. All the same, as the tank is a small one, it would be a good idea to empty it and set it up afresh with thoroughly washed and scalded compost, sterilised plants and water that has been boiled.

Diffuser stones should be cleaned occasionally to avoid blockage (see below)

My diffuser stones soon become choked with green scum, which prevents a proper outflow of air. Scrubbing them with a stiff nail brush has not provided the answer to this problem. Must I keep buying new stones, or is there any way I can render them serviceable again?

Ten minutes' immersion in a saucepan of boiling water usually results in a clogged-up diffuser stone being given a new lease of life.

Time and again I have tried to breed white worms in a shallow box filled with soil from the garden, but my efforts have never been crowned with success. For one thing, the white bread soaked in milk I used as food always turns mouldy soon after I introduce it. For another thing, the worms just disappear into the soil and are never seen again. Please tell me where I go wrong.

In all probability the soil taken from your garden is unsuited to white worm culture. Try again with yellow loam or leaf mould obtained from a horticultural sundriesman. Next, see that the moistened compost is covered with a sheet of glass to prevent rapid drying out. On top of the glass place a piece of linoleum or hardboard to exclude the light. Lastly, don't introduce too much food at the start, and use a small quantity of wholemeal bread, or cooked porage oats, rather than ordinary white bread.

My newly installed aquarium is illuminated by electricity. I have discovered that after the lights are switched on the upper levels of the water become warmer than those lower down. Will this difference in temperature affect the health of the fish?

Fish do not suffer any harm if there is a slight difference in temperature between the bottom of the water and the top. After all, similar conditions exist in Nature. In warm, sunny weather the surface of slow-moving or stagnant water is warmer than the bottom; during the cold days of winter it is the other way around.

What is the life-expectancy of a sailfin molly?

Generally speaking, a sailfin molly lives for about 2½-3 years.

How does one sex *Corydoras myersi*, and can this catfish be bred in captivity?

In mature fish the female has a larger and anteriorly wider (fuller-sided) body than the male. As to breeding the species, it is no more difficult to propagate than *C. paleatus* or *C. aeneus*.

Would a zinc-bottomed tank be suitable for keeping guppies?

Neither guppies nor any other tropical fishes should be housed in a zinc-bottomed tank unless the metal is first insulated from contact with the water by a thin layer of cement and sand (well-soaked in several changes of water before being set-up for fish), or by glass cut to size and bedded over it on ordinary aquarium mastic, or hot pitch. Zinc is highly toxic.

Does the glass catfish (*Kryptopterus bicirrhis*) make a suitable occupant for a community tank?

K. bicirrhis settles down quite well in a community tank if the other fishes living in it are quiet-living and non-bullying by nature. But a point to observe is to keep at least two glass catfish together. Solitary specimens miss the company of their own kind and soon die.

What water suits White Cloud Mountain minnows best: soft water with an acid reaction, or hard water with an alkaline reaction?

Water of moderate hardness with a reaction towards alkaline suits these fish best.

COLDWATER FISH-KEEPING QUERIES answered by A. BOARDER

In feeding with micro worms I find it difficult to prevent cereal from their food getting into the tank. How can I avoid this? Also how long does it take to get a culture of white worms going? How can a novice tell if he has a ripe culture of Infusoria?

If you place small sticks in your micro worm culture the worms will climb up them and then can be transferred to the tank. A small piece of glass laid on top of the culture will also collect plenty. It will take about 3 weeks to get a good culture of white worms. The best way is to get several boxes going; they can be stood one on top of the other so that they take up little space. The medium can be fine damp peat. Feed with damp bread with a drop of cod-liver oil on occasionally. A small knob of cheese will attract the worms so that a large quantity can be picked out with tweezers after 2 or 3 days. Keep in a cool and dark place and have a sheet of glass laid directly on top of the peat. Use from one box at a time so that you always have a reserve. Examine a drop of water under a microscope to see if the small mobile organisms known as Infusoria are present.

I am hoping to catch some newts in a local pond. Can I keep them in a 24 in. tank with some small fishes and what can I feed the newts on?

The newts will eat almost anything moving and gardon worms will be greatly appreciated. The newts could attack very small fishes. Remember that newts only go to the water to spawn, and once the eggs have been laid the parent newts will leave the water until the following spring. The newt tadpoles are very interesting to rear but they too will leave the water when fully developed.

Can I have a North American cichlid such as a 'pumpkinseed' in a tank with goldfish?

This will be in order as long as the tank is not overcrowded. Allow an inch of fish to each 24 square inches of surface area. These sunfish like a diet of live food and it may be difficult to get one to feed on any other type of food.

I am a member of a sports section of the firm where I work and we have been enabled to make a large fish pond for our angling section. It will cover about one and a half acres and will be from 3 to 6 feet deep. We have been given a number of fishes from a disused canal which was being filled in. There are roach, perch and a few tench. The trouble is that the pond is very new and we are concerned about feeding the fishes whilst the pond is becoming established. Can you give any advice?

It will not be long before your pond becomes self-supporting. Worms etc. will enter the water and many types of insects will lay their eggs there. You can assist at first by giving plenty of worms, frog tadpoles etc., and also some dry bread can be added. The perch will be likely to feed on any of the smaller roach or any ailing fish. To encourage the fishes to breed you should gather plenty of water plants from surrounding ponds and try to establish them in the shallowest part of the pond. Perch spawn early in the year and the tench much later, sometimes well into July.

One of my shubunkins has developed an incurable disease. I would like to kill it quickly and painlessly. What do you suggest?

A very quick way of killing a fish is to dash it on a hard surface, such as a concrete path. Death is instantaneous and I know of no better way.

I have four year-old moors in a bare tank. The temperature of the water is 62-65° F. (17-18° C.. I have reduced the light to retain the velvety black on the fish, but having no plants I find that the fish are continually at the surface of the water.

In the first place by keeping the moors at such a warm temperature I think that you are encouraging them to lose their black and turn bronze. This has been my experience. The fishes keep near the top to obtain more oxygen, which is missing in the water. This is probably because the water is warm and there are no water plants in the tank. Include some growing water plants in the tank. Not only would they tend to keep the water in a purer condition but I am sure that the fish would prefer these conditions.

I have a tank 36 in. by 15 in. by 12 in. set up last November. My fishes are : two shubunkins, two fantails, two veiltails, two moors, two catfish, one comet (all about 2 in.) and one golden tench (3 in.). About 2 weeks ago the catfish died. I bought another and that died. Since then I have added seven fishes but they have all died within 48 hours of being placed in the tank. The original fishes are healthy and appear happy; however, as soon as I add another fish it soon dies. What is the trouble?

It appears that your trouble is that you are trying to keep too many fishes in the tank. It will hold only 18 in. of fish. The original fishes have no doubt grown and need more space. When you introduce a fresh fish it may not be in the pink of condition. As there is a lack of oxygen in the tank the new fish soon dies. The fact that some fishes keep all right in the tank is an indication that there is nothing radically wrong with the set-up. It is just that when more are added the overcrowding becomes apparent and one or more fish die. It is probable that even if you do not place any more fish in the tank one or more more of the fishes already there will die as their sizes increase. It is so much easier to keep fishes and plants in good condition when the tank is not overcrowded, and there seems little sense to me in trying to over-stock.

I have lost several goldfish from my pond. They apparently died through a form of green fungus on their bodies. What is the cause and cure for this?

The green fungus was really the ordinary fungus, which is white at first; in a pond where there is a quantity of green algae the white soon becomes green. The usual salt bath treatment will usually effect a cure.

Is there any particular make of bituminastic paint available for painting cement that is not harmful to plants and fish?

Any good make of bituminastic paint should be safe to use. However, a few hints on using it may help you. You cannot paint this on to a damp surface as its nature is to repel moisture; the surface must be quite dry. After a couple of days the cement should be well washed before refilling with fresh water.

I have a goldfish which is 12 years old. Some time ago the body seemed to swell to one side and the back became bent. The fish has now lost its balance and stays at the bottom for a long while, and only swims normally with difficulty. What is the cure?

I do not think that anything will cure the curvature of the spine. It may be due partly to old age, just as humans may get curvatures when they are old. You could try the fish in shallower water, and a little warmth might help its balance to be regained.

I hope to breed telescopic eyed moors. Have you any information on the subject?

All moors should have telescopic eyes. Their breeding conforms to the general method of other fancy goldfish. There are two types, the veiltail and the fantail moor. The latter is perhaps the easier to breed for the inexperienced. Try to get some good stock from an established strain to start with.

I lost three or four dozen goldfish in the winter. The water in the pond now smells very foul and looks black. Would it be safe to introduce any more fish?

The water is obviously unfit for keeping alive any more fish. Empty as much as possible of the water and fill up with fresh. Leave for a few days to see if the water remains pure. If not, repeat the treatment. Once the water is clear and does not have a bad smell new fish can be added. There is no doubt in my mind that it is not the cold alone that kills pond fishes, but the foul water with little or no oxygen in the danger when the pond freezes over.

Is there a way of maintaining a supply of *Daphnia* in a 18 in. by 12 in. tank to supplement dried food for seven 2 inch shubunkins?

I do not consider it possible to keep up a supply of *Daphnia* for your fish in a tank of this size. You would find it very difficult even to keep alive a number of *Daphnia* in this tank for more than a week. They need a good supply of oxygen and must also be fed. You will be well advised to concentrate on breeding white worms instead. These are far easier to breed and a very good form of live food.

Can you tell me what the creatures are which swim about in my tanks? They are very small and multiply very rapidly. I think some are eaten by the young fish but they also eat the goldfish eggs.

From your description I think the animals are planarians. If your fishes eat them, then withhold all other food for a time and the planarians will be lessened in numbers. You can kill them by adding a tablespoonful of household ammonia to each 5 gallons of water, but you would have to remove the fishes first.

Is it my fault that 50 per cent of the goldfish I buy die in the first 2 months? They came from six different firms and all seemed healthy when bought. They certainly appear very thin when purchased and after about 3 weeks they go off their food and soon die of fiorst or what seems like malnutrition. The ones which survive the first 3 months become plump and healthy and later breed.

It is possible that the fish you bought have been kept in overcrowded conditions and have been bred in a warmer climate. Many of these imported fish never establish themselves in this country. They can often be seen crowded together in tanks, wobbling about with their fins closed and mouthing at the surface. They never seem to swim on an even keel but keep to an angle of about 40 degrees from the top. It is not easy to get such fish in a healthy condition, but the best way is to give them plenty of space and a good supply of live foods such as white worms or chopped garden worms.

What is the best temperature for young Bristol shubunkins during their first winter if they have been reared at 65°F (18°C) until then?

It is customary to reduce the temperature of the rearing tanks gradually, in October, to the lower fifties. The fish will not notice the difference if this is done over a period of about a fortnight. These fish could stand as low as 40°F (5°C) quite well if they have been brought to it in stages. I think that at 50°F (10°C) they will do better, but do not expect them to feed at the same rate as they did when the temperature of the water was higher.

We have found leeches in our garden pond and have been told that some fish eat them. Which kinds are they, please?

I do not know of any coldwater fish that would eat fully grown leeches. Small ones might be eaten by tench or perch but I have had no actual experience of this. A better way of ridding the pond of the leeches is to tie a piece of raw meat on a piece of string and lower it in the pond each night. Wrap a piece of small mesh wire netting around it to prevent the fish from eating it. If the meat is removed each morning it will be found that many leeches will be adhering to it and then they can be killed.

Can you give me the name of a small book which deals with the setting-up of an aquarium from scratch?

The book *Coldwater Fishkeeping*, price 5s 4d free from *The Aquarist*, will be most helpful to you.

Could fungus be introduced to a tank by adding new plants?

Fungus could appear in a tank at any time and need not have been introduced especially on fresh plants. The spores causing fungus are often present in water, but if the fishes are in good condition they can withstand any attack. The mucous covering is a protection against diseases and as long as this is present all over the fish it will prevent foreign forms of life from living on the skin of the fish.

FISH DISEASES

Dropsy

THE body tissues and certain internal organs of a fish suffering from dropsy fill with fluid. This causes the belly to swell to enormous proportions and makes the scales stand out at right angles to the body. The fish quickly loses its colour and becomes extremely languid. In the early stages of this fatal disease the symptoms can easily be mistaken for those associated with scale protrusion.

Very little is known about dropsy. It has been found, however, that dropsy can be contagious when a fish is infected with a parasitic-type virus and the exudation from the bloated body tissues contaminates the surrounding water.

Drawing off the fluid from a dropsical fish with a hypodermic syringe will help to check the declining condition of the fish but it does not bring about a permanent cure; quite often the victim will linger for weeks before it eventually dies. Good results may be achieved with the use of chloromycetin but the sale of antibiotics in Great Britain is not permitted without an authorised prescription.

Tropical fishes generally possess a high resistance to dropsy, with the possible exception of aged mollies, but it is likely to occur sporadically in collections of fishes.

R. E. MACDONALD

Octopus in Captivity

SINCE the new saltwater pipeline was installed last year, octopus specimens are surviving better in the Vancouver Aquarium.

A small male specimen weighing 15 pounds was captured by Terry McLeod and John Rawle in late June, 1964. It now weighs 55 pounds and appears to be very healthy. Both the rapid rate of growth and the period of survival in captivity (11 months) are records for this Aquarium, although the Point Defiance Deep Sea Aquarium in Tacoma, Washington, has succeeded in maintaining them for a longer time.

Another male octopus, about 44 pounds in weight and 10 feet across from the tip of one tentacle to the tip of the opposite one, was caught at West Vancouver this May for the Aquarium. The divers descend 50 feet or so and locate the octopus, which is put in a plastic bag beneath the water as soon as it is captured. In this way the animal can be transported to the surface in the cool water from the bottom and not be brought into contact with the warmer surface layers. The rise in temperature can kill an octopus from deeper water.

A Waterfall and "Babbling Brook" in a Suburban Garden

by W. HULL

OVER a period of years I had constructed four informal ponds and a pond-cum-bog garden at the rear. They had all been built at different levels, and channels had been left at each end to serve as inlets and outlets for water. At the far end of the pond on the left I had built up a solid rockery. It is not so easy as it might seem to persuade a stream of water to flow with a natural effect, and as I built this up, it was channelled out here and there on the top, whilst odd bits of stone were stuck into the wet cement.

The pond at the lowest level was close to my garden shed, where I already had electric lighting. I bought a centrifugal pump, also a foot valve and strainer supplied by the manufacturers; the strainer is essential to prevent mud and leaves being drawn into the pump. The maximum output of the pump was 750 gallons per hour, with a consumption of 210 watts. I screwed the pump to a shelf in the shed, about 4 feet higher than the bottom of the pond. Following the maker's simple instructions, electric wiring was quickly completed.

From the foot valve and strainer in the pond to the pump in the shed, I used flexible connecting hose, 1 inch bore, and adjustable pipe clips, as a suction lift must not be restricted in any way with small bore pipes. Inside the shed I used galvanised metal piping, 1 inch bore, and two stop valves. My purpose here was to be able to control two streams of water, together or separately, both of which could be shut off, or increased, as I fancied.

The longest length of piping ran from the shed to the back of the rockery and was hidden from view behind the walls of the left-hand pond. The shorter length led to the near end of this pond, which was close to the garden shed. Under the rockery, a channel led into the pond-cum-bog garden and the outlet from here led to a channel on the right-hand side of the large central pond. The outlet from this, was under the footpath and into the pond at the lowest level, as was the outlet from the central pond. Thus the water drawn from the pond could be divided into two streams, both of which would terminate at the source from which they were drawn, the same water being used over and over again.

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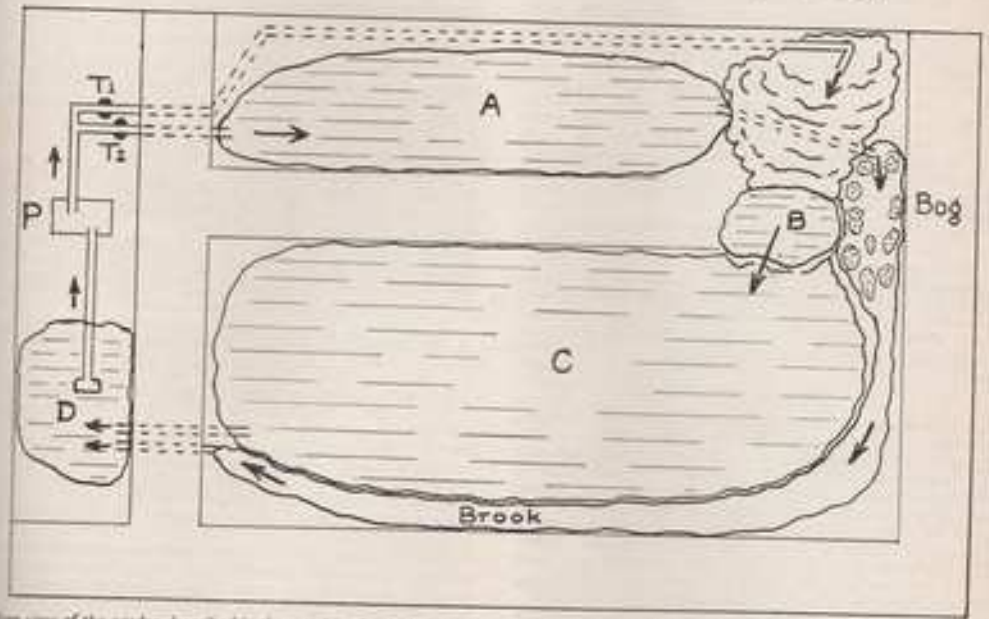
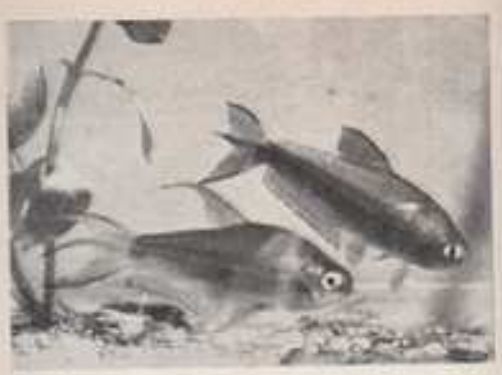


Plan view of the garden described in the article. Ponds A, B, D and the 'central pond' C are connected via piping (broken lines indicate buried sections) to one another and the pump P. Arrows indicate direction of flow. Pond B receives the waterfall flow from a rockery and pond A supplies the bog garden and 'brook'. T1 and T2 are stop valves on pipes from the pump

BREEDER'S RECORD

Success with the Emperor Tetra

(Nematobrycon palmeri)



by H. E. R. THOMPSON

A MEMBER of the characin family, this little fish inhabits the San Juan Basin of the Pacific slope of Colombia, and although not carrying the flashing colours of the cardinal or neon tetras, it has a beauty of its own and is, in my opinion, equally as attractive as these in a quieter way. The back of the fish is brown, shading through gold to a wide blue area which scintillates as the light catches the fish in various positions; below this blue area a wide band of black extends right through the body; the belly is golden. The eye is of great attraction, giving a brilliant blue to green spot which intensifies according to light. Dorsal, caudal and anal fins are edged with black, and the anal, which is rather large, has a pale yellow margin which is more intensified in the male. A distinguishing feature is the black filament through the centre of the caudal or tail fin, which together with the black edging, gives a three-pronged effect; this centre filament and the black edging on the dorsal appear to be longer and more pronounced in the male. Fully mature specimens measure up to 2 inches in length.

I have two pairs of these little beauties in a community tank, and when the males put on a show for the females, it is a sight to make any aquarist pause in admiration. In temperament the fish is neither aggressive nor timid. It is fairly active but rests in the proximity of plants long enough to allow one an opportunity to study. A temperature range of 72°F to 78°F (22°C to 25°C) suits very well, with slightly higher temperatures for breeding.

Spawning and Rearing

I should like to describe my experience of spawning and raising the emperors. A 24 in. by 8 in. by 8 in. angle-iron tank was used, filled to a depth of 6 inches with soft clear water: tests showed that the water used was 7 degrees hardness and had a reaction of pH 7.4. A ½ inch bottom layer of peat moss was put into the tank and allowed to stand for 5 days with gentle aeration. Spawning medium used was coconut fibre, as used by upholsterers (boiled before placing it in the tank). The breeding pair were introduced together at a temperature of 80°F (27°C). I did not actually witness the spawning, but during the next 2 days both fish were unusually active and the colours of the male noticeably intensified.

I was certain spawning had occurred although I could not detect any appreciable difference in size of the female. However, confirmation came when 5 days after introducing the pair, I saw the first free-swimming youngster. The parents were immediately removed and during this procedure I was pleased to see several more babies emerge from the spawning medium. Infusoria was introduced and observation over the next 5 days proved that the tummies of the fry were full to capacity. Newly hatched brine shrimp was then given and rapid progress noted; a few days later micro worm was added to the diet.

Small Brood

At the time of writing the babies are 10 weeks old and measure ½ to ¾ inch in length. They carry the full colours of the parents, the gold coloration being rather more prominent, but as yet do not show the extensions to tail and dorsal. Twenty-six have been counted, and I understand that 30 is the most that can be expected.

I consider the emperor tetra to be a most desirable fish for the community tank as it is quite hardy, is a good mixer and will take any food, although, like most fishes, it shows a preference for live food. To anyone with an interest in spawning, this fish is a challenge, not being classed among the more ready breeders, but nevertheless a fish from which one can, with patience, expect results.

A Waterfall and "Babbling Brook"

continued from previous page

When the pump was switched on at last, the result was very effective. Water flowed over the rockery, into the tiny pond below it and into the large central pond, while the "babbling brook" ran through the bog garden and made its way under the footpath to the lowest level pond. All the piping had been concealed and my visitors were enchanted with the lovely spectacle. As for myself, I considered that my labours had been well worth while; in fact, a huge success!

The fact that I had five ponds need not deter would-be enthusiasts, as it is a simple matter to provide a waterfall for even one informal pond, using its water content for both source and stream. I would be pleased to answer any queries on this subject, through *The Aquarist*.

Pumps may also be housed anywhere out of doors, so long as an electric supply is available.

our readers write

Readers are invited to express their views and opinions on subjects of interest to aquarists. The Editor reserves the right to shorten letters when considered necessary and is not responsible for the opinions expressed by correspondents.

Address letters to The Editor, *The Aquarist*, The Butts, Half Acre, Brentford, Middlesex

Red-tailed Sharks

I READ with great interest Mr. Birkin's letter (*The Aquarist*, May), particularly so because yesterday evening we watched a performance by our red-tailed black sharks which could only have been a rehearsal for a future mating.

We have three sharks, and when no. 1 and no. 2 (by size) outgrew their tank I shifted them to another. This is a 12 inch diameter all-glass round tank of depth 9 inches with a bottom of small stones. It is rather sparsely planted and is kept at about 76°F (24°C). The tank is only 2 or 3 weeks old. Knowing that *Labeo bicolor* likes to lurk, I piled stones so that shark no. 1 had a large cave and shark no. 2 had a small cave adjoining and with a passage through which no. 2 could travel, but not no. 1. No. 1 always chases no. 2 out of his cave very briskly.

For 2 or 3 days no. 1 has been performing diving rolls at low altitude over the stonework in a manner which suggested either gill flukes or romantic bonhomie. Suddenly no. 1 and no. 2 met, and folding their dorsals over each other's backs, danced a samba-esque pas de deux, which continued for at least 5 minutes. No. 2 then dived into no. 1's cave and, to our surprise, no. 1 did not chase her out. She stayed in and fussed around, fanning her tail and apparently driving out rubbish, then proceeded to poke her nose out at intervals until no. 1 approached his cave. She left for her own and no. 1 had his turn at fussing around in circles. Then another little chase occurred, followed by the above-described in-and-out of cave routine.

No eggs were deposited or fertilised as no doubt these fishes are too young (about 5 months at the most). But I live in hopes. I can't help thinking that it is the rockwork which is the vital factor. I feel that the two widows and two angels will have to come out of this tank; they are greedy brutes.

J. Baxter,
Redcar, Yorkshire.

Science and the Aquarist

THERE has always been a certain amount of friction between the boffins and the layman, or even just scientifically systematic people and the person who tries by haphazard means to achieve the same ends (letter: "Breeding Fighters", May).

A lot is to be said for both methods, because it is a fact that good fish can be produced by selective breeding "by eye" and equal or even better results can be achieved by genetic breeding; in fact with the latter method results can be almost guaranteed. The point about both these methods is that the person who embarks on selective breeding might possibly get a better result earlier than the person who breeds strictly to genetic rules. The boffin, amateur or otherwise, may frown on this point of view, but I am certain that many aquarists who are not scientifically inclined would be disheartened if they had to follow the dictates of the scientific breeder.

A large number of good breeders are people who breed from experience, not from "books", and personally I should hate to see them go. But by the process of natural selection I should think they'll be with us for a long time to come.

P. R. Reidy,
London, E.14.

Aquarium Backgrounds

I WOULD like to congratulate you for your very interesting magazine. I have been secretary for the Oslo Aquarium Society as well as the Norwegian Aquarium Societies Association and I have found quite a few hints on entertaining the members in your magazine under the heading "News from Aquarists' Societies".

I have even tried my hand in making my own magazine, sending out a duplicated issue once a month. I very much enjoyed that, but unfortunately my time is short and my family and pets suffered.

In your May issue was a note about metal foil as a background. I have backgrounds on all my aquaria, consisting of foam plastic of the kind used for insulating buildings, refrigerators etc. It is sold in white sheets and can easily be fitted into the frame, but outside the glass. I paint it black with a matt latex paint. On top of that I make a few bold light green strokes in a criss-cross pattern. In this way I get a pleasing background with depth in it, and at the same time I achieve insulation of the aquarium against loss of heat; in the severe winter we have in Norway, as you have as well in England, that is a great saving.

Claude Stranger-Thorsen,
Ås, Norway.

Pen Pal Club

I AM writing this letter in hopes to start a "Pen Pal Club" for aquarists around the world. My idea is to write to several different countries to exchange ideas and different

things with each other around the world. So far I have written to South Africa, Scotland, England, Hawaii, Australia, New Zealand, Canada, India and France.

If you think this is a good idea please let me know your views on it. As I receive letters I will put the name and address, plus the type of fish that is raised, and mail each member a list. There will be no dues or fees, just the price of a stamp.

JACK ROPIAK,
1119 W. Drummond Place,
Chicago, Illinois,
U.S.A.

Fin Rot

DURING the early spring of this year, my 30 in. by 15 in. by 12 in. community tank, containing a fairly wide range of tropical fishes (black mollies, guppies, catfish, zebras, swordtails, neons, glowlights and harlequins) became severely infected with the *above*. My water temperature never alters by more than ± 1°, from 76°F. pH is 6.8°, the water is well aerated and filtered, also all necessary precautions are taken before entering new fish into the tank (to prevent chilling etc.).

I started treatment with the following recommended cures. (a) The salt treatment cured the black mollies and swordtails, but the infection returned after 4 days and the remaining infected fish were not cured. I lost during this period two harlequins and one zebra.

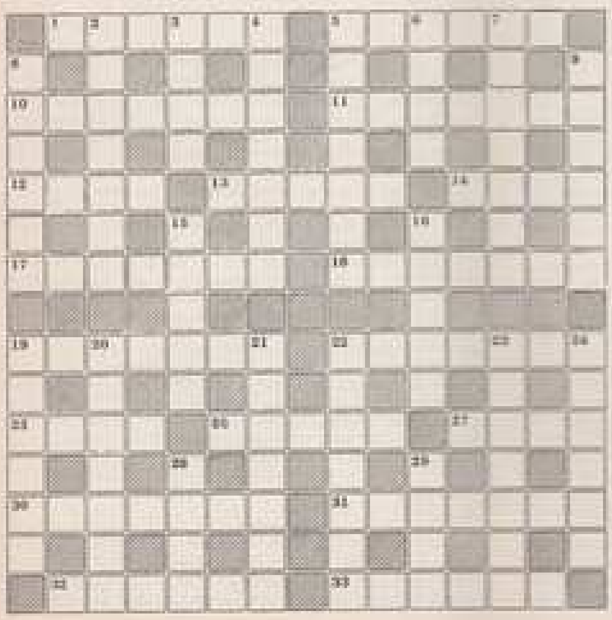
(b) After the failure of the above, I tried another well-known cure, using phenoxetol according to the manufacturer's instructions. Although I have had great success with coldwater fishes with this treatment, I did not with tropicals. The only effect which I noticed was that of turning the tank water oily and damaging the plant life. However, one result was obtained and that was the cure of a catfish (*Corydoras melanistius*) which suffered from "pop eye". This fish had the complaint for about 6 months. After leaving the phenoxetol for the recommended period of 2 weeks, during which time I lost one red swordtail, one zebra, one tuxedo platy, one neon, three guppies and three black mollies, I then gradually changed the water with 'aged' water of the same temperature.

(c) I then tried the third and successful treatment with acriflavin tablets, one tablet being introduced into the tank 96 hours after the previous treatment, and the second 48 hours after. Within 24 hours of using the first tablet the fishes started to take interest once more in food (*Daphnia* and *Tubifex* being fed over the period of infection) and within 72 hours the most stubborn cases began to heal.

The result of using acriflavin I may add restored very quickly the general fish, plant and water conditions. Also within a week small fry were obtained from one female black mollie and a green swordtail.

D. G. CRISP,
Show secretary,
Wimbledon and Merton Aquarist Club,
London, S.W.19.

The Aquarist Crossword compiled by L. BRADLEY



CLUES ACROSS

1. Sounds as if this counting house is heated (6).
8. Genus of swamp plant (8).
10. Carps (7).
11. Commonly known as the water flea (7).
12. Messenger of the gods (4).
13. River (5).
14. Which ever way you look at it he is a simpleton (4).
17. Ace? Probably a gourami (3-4).
18. Eat out (anag.) (7).
19. See 22 across, 2, 9 and 20 down (7).
22 and 19 across. *Aequidens maronii* (7-7).
25. Australian passerine bird (4).
26. Occurrence (5).
27. All change in cricketing circles (4).
30. I'd be seen in the river catching fish with this (7).
31. Small waterfall (7).
32. Beach (6).
33. To promote a mixed up rep. and a backward ref when they get together (6).

CLUES DOWN

2 and 19 across. *Cichlasoma festivum* (7-7).
3. —— the terrible (4).
4. Mountain (7).
5. Animals that are set in their ways? (7).
6. Many insects this cover (4).
7. A garden for the first woman according to Hesiod (7).
8. A fish having colour pigment absent (6).
9 and 19 across. *Astronotus ocellatus* (6-7).
15. Eaten by first part of 26 across (5).
16. Seed, baking or breeding (5).
18. Celestial goldfish (8).
20 and 19 across. *Cichlasoma nigrofasciatum* (7-7).
21. The mixed up dove to Edward is dedicated (7).
22. Marsh marigold fit for royalty (7).
23. Clear away (7).
24. Rebate (anag.) (6).
28. Greek letter (4).
29. Island (4).

Solution on page 74

News from AQUARISTS' SOCIETIES

Monthly reports from Secretaries of aquarists' societies for inclusion on this page should reach the Editor by the 15th of the month preceding the month of publication.

THE **Thorne Aquarist Society** held their fourth annual Open Show recently. The show was a great success, even more so than the previous three, attracting a record number of 999 entries.

The Society is having a "Bring and Buy" sale on Thursday evening the 29th July, at the "Rising Sun" Hotel, Thorne, commencing 7.30 p.m. The results of the Show were as follow:

Livebearers: 1, Mr. Brown (Dewsbury) 2, Mr. Davis (Worksop); 3, Mr. Davis (T.A.S.); Characins 1, Mr. Carr (Bradford); 2, Mr. Riley (Nottingham); 3, Mr. Davis (T.A.S.); Barbs: 1, Mr. Riley (Nottingham); 2, Mr. Jepson (Scunthorpe); 3, Miss Wilkinson (Mexboro); Catfish & Loach 1, Mr. Milner (Penistone); 2 & 3, Mr. Dodbiddi (Thorne); Anabantids: 1, Mr. Gratton (Middlesbro); 2, Mrs. Davies (Worksop); 3, Mr. Tye (Worksop); Siamese Fighters: 1, Mr. Davis (T.A.S.); 2, Mr. Foster (Worksop); 3, Mrs. Mawson (Worksop); Cichlids: 1, Mr. Dennis (Worksop); 2, Mrs. Knowles (Cresswell); 3, Mr. Jacobs (Hull); Toothcarps: 1 & 2, Mr. Dandy (Scunthorpe); 3, Mr. Bellymore (Nottingham); Danios, Rasboras & Minnows: 1, Mr. Davis (T.A.S.); 2, Mr. Carr (Bradford); 3, Mr. Mawson (Worksop); A.O.V.: 1, Mr. Davis (T.A.S.); 2, Mr. Mackrill (Goole); 3, Mr. Haley (Bradford); Pairs Livebearers: 1, Mrs. Reynolds (Scunthorpe); 2, Mr. Davis (T.A.S.); 3, Mr. Bean (Louth); Pairs Egglayers: 1, Mr. Jacobs (Hull); 2, Mrs. Lindley (Pontefract); 3, Mr. Gray (Thorne); Breeders Livebearers: 1 & 2, Mr. Davis (T.A.S.); 3, Mr. Dennis (Worksop); Breeders & Egglayers: 1, Mr. Dooley (Louth); 2, Mr. Wells (Thorne); 3, Mr. Fairclough (Doncaster); Colourmut: 1, 2 & 3, Mr. Hill (Nottingham). Best fish in the show (Blue Gourami), Mr. Graham of Middlesbrough.

* * *

A METROPOLITAN WATER BOARD representative, Mr. M. O. Warne, was guest speaker at a meeting of the **East London Aquarists' and Pondkeepers' Association**. He spoke on water supplies and their importance to the aquarist.

At a later meeting members put on a show of fishes. Labyrinth: 1, Mr. Mayhew (Paradise); 2 and 3, Mr. J. Smith (thicklip) and (Leeri); 4, Mr. Josh (three spot). Breeders: 1, Mr. O. Green (opaline); Rasboras, 1, Mr. G. Green (scissortail); 2, Mr. F. Vicker (harlequin); 3, Tyndhurst; 1, Mr. W. Bunnage (Anostomi and Veraillifer). Junior Guppy competition, 1, P. Corby.

* * *

AT the May meeting of **Bath Aquarist Society**, members saw a colour slide show of various tropical fish, cold water fish and birds given by Mr. V. E. Cundall, of Bristol.

The table show for the month was plants and swordtails. Results were as follows:—Plants: 1, 2 and 3, Mr. E. Short; swordtails: 1, Mr. T. Callow, 2, Mr. D. Lovegrove, 3, Mr. F. Wallace.

* * *

THE annual Tropical Table Show of the **Stroud and District Aquarist Society** was held recently.

The best fish in the show was a Tiger Barb owned by Mr. W. Hawksworth. Other awards were: Livebearers, Mr. C. Nightingale with a Swordtail; Best Characin, a Glowlight Tetra, Mr. E. Whately; Best Cichlid award, Mr. E. Wheatley with A. P. Kribensis. A Bristol Lowfin, belonging to Mr. T. N. Arton took first award in the A.O.V. class.

Judging was done by a panel of members of the Bristol Tropical Fish Society. During judging, members were entertained to a talk on Fancy Guppy varieties by Mr. Court, the chairman of the Bristol Society.

* * *

THE **Midland Association of Aquarists' Societies** Fourth annual Convention and Open Show held at Guest, Keen and Nettlefolds Ltd., Atlas Works Restaurant, Darlaston, Staffs, on Sunday 30th May was an undoubted success.

Attendance numbering over 500 attended from all parts of the Midlands and from as far afield as Manchester, Wigan, Cambridge and Oxford. Over 800 exhibits were staged including a Decorative Aquaria Class. The First Award in this class was gained by the Host Society, G.K.N. Pond and Aquarium Society.

A programme of films presented by Norman Mason-Smith from Cambridge was the main event during the time when Judges were busy at their tasks followed by, during the later afternoon, a talk and Slide show "The Aquarist on the Sea Shore" presented by Mr. C. Dodds. Whilst the staging of these Annual Conventions mean a lot of hard work for the Host Societies and the M.A.A.S. Committee the rewards are evident by the enquiries made from Societies not already in the Association and by the reputation already being offered for the staging of a 1966 Convention.

* * *

THERE was a good attendance at the first show held by the newly formed **Worthing Tropical Fish Club**. Although the number of entries was less than originally hoped for the Judge Mr. A. Riley speaking after perusing the prizes said that although a few of the fish were immature, the general standard of entries was high.

The class was Characins and the prizes were awarded to the following exhibitors.

1, Mr. D. J. Newport (Penguin Tetra); 2, Mr. A. J. Mowy (Serpae Tetra); 3, Mr. S. Jones (Glowlight Tetra); 4, Mr. D. Raymond (Red Eye Tetra).

For information about the club, please contact the secretary Mr. D. J. Newport, 116, Western Road, Sompting, Sussex.

* * *

THE officers elected at the annual general meeting of the **New Forest A.S.** for the coming year were as follow: Chairman, Mr. A. Williamson; secretary, Mr. R. Travers; treasurer, Mr. D. Lees; show secretary, Mr. E. Howell; show manager, Mr. D. Harding.

In his report Mr. Travers said the society had enjoyed a successful year, with many activities, and had attracted 30 new members. He thought there were people still in the district who were not aware of the existence of the society and anyone interested should contact the secretary—Mr. R. Travers, 6 Auckland Avenue, Brockenhurst, Hants.

* * *

THE **Newport A.S.** held two very good meetings in May. At the first there was an excellent talk on catfish by Mr. Jones of Chelmsham. The table show had two classes, one for catfish and the other for characins. As the second there was a very good 'bring and buy sale'. Auctioneered by Mr. Barry Kelly. The table show was for A.V. livebearer (pairs) and A.V. egglayer (pairs). Mr. Jones then described what fish invited and how to look for it in a good pair of fish.

* * *

MEMBERS of the **North Warwickshire A.S.** recently gave a very interesting film and slide show. Mr. K. Wells put on a cine film show on the activities of the club and fish behaviour in his fish house. Mr. M. Davis and Mr. M. Reynolds put on a slide show on tropical fish and all enjoyed an excellent evening's entertainment. At the end of the month Dr. Cole, a friend of long standing with the club, gave a talk on genetics, a talk which proved most enlightening. A table show for livebearers resulted as follows: 1, T. Nason; 2, K. Wells; 3, H. Wilson. An outing to Morecambe is one of many outdoor activities planned for the near future.

* * *

AT the June meeting of the **Wakefield and District A.S.** the results of the two table shows held were as follows: Cichlids: Mr. McQueen (angel) and A.O.V.: Mr. McQueen (koi gourami). The house aquarium competition trophy was presented to Mr. Archer.

* * *

AT the annual general meeting of the **Coalville and District Aquarists' Society** (Leicestershire) the secretary, Mr. J. A. Reed, said that the society was formed in June last year and generally speaking satisfactory progress had been made during the year. He gave details of membership figures and said that the majority of members had given their support and meetings had been well attended. It was a pity, he added, that there were not more junior members. If the number of juniors increased a separate section could be formed to go into the more elementary methods of fish-keeping. For a number of reasons, showing on a bigger scale, such as inter-society shows, etc., had not been exploited as much as one would have liked, but it was hoped to remedy this in the future. One of the achievements during the year was the participation in the Midland Open Show at Bingley Hall, Birmingham. The society was third in the furnished aquaria section and one member, Mike Yeomans, was successful in an individual class. A letter was received from the chairman Mr. J. H. Hemsley, who expressed his regret that he would have to relinquish the position because of numerous other commitments. Mr. Hemsley said it was with great personal pride and pleasure that he looked back on a busy and flourishing year and it was an achievement to have helped found such a society. The letter was accepted and Mr. Hemsley was thanked for his services. Officers elected were: Mr. A. G. Ings (chairman); Mr. M. J. Yeomans (vice-chairman); Mr. J. A. Reed (secretary); Mr. F. Bower (treasurer); Mrs. Ings (show secretary); Mr. C. Garrett (assistant show secretary); Mrs. J. Reed (social secretary); Mr. Reed (magazine editor); Mr. G. McMeeken, Mr. L. Moore, Mr. R. Tattersall and Mr. H. Arrowsmith (committee). A membership campaign is to be started and a photographic study group formed. Please note: Correspondence concerning shows should be sent to Mr. A. G. Ings, Broad Lane, Markfield and all other correspondence should be sent to Mr. J. A. Reed, Hebley Hall Cottage, Copt Oak Road, Markfield.

* * *

THE annual show of the **Llantwit Major A.S.** was held recently in Llantwit Major.

Plaques were awarded to R. Harris for best breeders livebearer, and best egglayer (single fish); K. Farrace for best livebearer fish; A. Jobertson for best breeders team egglayers; C. Pemberton for best junior entry. Challenge cups will be presented at the annual dinner to Mr. R. Wigg for best guppy and furnished aquaria. Class results: Furnished aquaria: 1 and 3, R. Wigg; 2, P. Barnes. Fighters: 1, P. Barnes; 2, C. Pemberton. Labyrinths: 1 and 4, R. Harris; 2, M. Sanders; 3, M. Strickley. Barbs: 1 and 3, K. Farrace; 2, R. Wigg; 4, R. Harris. Hemigrammus: 1, A.

Ibberson; 2, D. Songhurst; 3, R. Wigg. A.O.V. characins: 1 and 2, K. Parrent; 3, A. Ibberson. Guppy male: 1, 2 and 4, R. Wigg; 3, R. Harris. Guppy female: 1 and 2, K. Parrent; 3, A. Mayers. Platy: 1, A. Mayers; 2, R. Harris; 3 and 4, D. Songhurst. Swordtails: 1 and 3, M. Sketchley; 2, J. Sanders. Mollies: 1 and 2, K. Parrent; 3, D. Songhurst. Breeders egglayers: 1, A. Ibberson; 2, W. Ward; 3, R. Harris. Breeders livebearers: 1, R. Harris; 2, A. Ibberson; 3, R. Wigg. A.V. coldwater: 1, 2, 3 and 4, B. Light. A.O.V. goldfish: 1, R. Wigg; 2, H. Clarke; 3 and 4, W. Ward. A.V. catfish: 1, R. Harris; 2, J. Taylor; 3, M. Sketchley. A.O.V. egglayers: 1, P. Bandera; 2, J. Mayers; 3, R. Wigg; 4, Clarke. Breeders guppies: 1 and 2, R. Harris. Junior class: 1, 2 and 4, C. Pemberton.

* * *

THE First Open Table Show of the **Stone A.S.** will be held on Sunday 10th October. Full details and schedules may be obtained from Mr. K. J. Harvey, Show Secretary, 61 St. Vincent Road, Walton, Stone, Staffs.

* * *

RECENTLY the **High Wycombe & District A.S.** held its Annual General Meeting, the only change in officers being the Secretary, Mrs. Freda Watts being unable to continue after years of devoted service owing to business commitments.

Recently the Society accompanied the Uxbridge A.S. on a behind the scenes tour of the Aquarium at the London Zoo, and members voted this the event of the year, the feeding of the 'Archer Fish' being perhaps the most popular single item.

The new secretary is Mr. Derek S. Ray, 4, Terryfield Road, High Wycombe, Bucks, and any prospective members would be very welcome at 'The Royal Oak' Bridge St., High Wycombe. 2nd and 4th Thursday each month at 8 p.m.

* * *

IN response to the reader who is under the impression that the President, Secretary and Breeders' Secretary of the **Nottingham & District A.S.** is one person, the list of the officers nominated and accepted at the last Annual General Meeting was as follows: President, Mr. H. P. Lynes; Secretary, Mrs. H. J. Chambers; Breeders Leader, Mr. J. Brittain. All other society officers are serving their second year of office.

* * *

RECENTLY two very enjoyable club evenings were spent at the headquarters of the **Freelance A.S.**

On the first occasion a very interesting lecture was given by Mr. Kamesky who also showed his very beautiful slides featuring Aquarium Plants. The second was an inter-club show with the **Croydon A.S.** the result of which was a tie.

* * *

THE annual convention of the **Hendon and District A.S.** will be held on Saturday, 16th October. The speaker will be Mr. A. van den Nieuwenhuizen who makes a very welcome return visit.

His talk will be illustrated with his excellent colour slides. Amongst the many subjects mentioned, he will tell of his experiences with the Sylvania GRO-LUX lamps which have been in use in Holland for several years but are only just becoming available in this country.

* * *

AT recent meetings of the **Nottingham Tropical Fishkeepers'**, Mr. A. Atkins gave a very interesting and informative lecture on 'Disease of Tropical Fish', and there has been an Inter-Society Competition with Nottingham and District. Mr. W. J. Christian very kindly consented to be the judge for the evening. The club offers an open invitation to all visitors and new members. For further details please contact the secretary: Mrs. H. Parris, 37, Hucknall Rd., Bestwood Park, Nottingham.

* * *

THE Manchester & District Section of the **Fancy Guppy Association** Open Show was very well supported with 120 entries. Members from the Glasgow, Radlett, Edmonton and the new South London Section were represented on the Show Bench. Class winners were as follows: Delta and Swords, Mr. T. Hallett; Flagtails and Breeders Pairs, Mr. R. de Groot; Female and Colour Class, Mr. A. McGeary; Veiltails, Mr. K. Savage; Wedgetails, Mr. H. Ludwig; Original, Mr. W. Wakeling; Scarftails, Mr. F. Partington; A.O.V. Females, Mr. G. Goodall; Breeders Females, Mr. G. Johnson; Master Breeders, Breeders Males, Juvenile Females and A.O.V. Males and also Best in Show, Messrs. Beresford and Jeffery. Junior and Junior Breeders, Master H. Scotland.

* * *

THE results of the **Oldham & District A.S.** Open Show were as follows: BEST FISH IN SHOW was won by Mr. G. DAVIES. A member of a new Society TROPICAL AQUARIUM BREEDERS with a magnificent SCATOPHAGUS ARGUS.

Livebearers—Guppies: 1, Mr. E. Cartwright (Gorton & Openshaw); 2, A. & F. Staniforth (Cresswell & District); 3, Mr. Mawson (Worksop). Mollies: 1, Mr. G. Davies (T.A.B.); 2, Mr. Roberts (Barnsley); 3, Mr. L. McCourt (Gorton & Openshaw). Swordtails: 1, Mr. G. Davies (T.A.B.); 2, Mr. Mawson (Worksop); 3, Mr. J. Mitchell (Macclesfield). Platies: 1, Mrs. F. A. Nicholls (Oxram); 2, Mr. Dernie (Worksop); 3, Mr. W. Taylor (Oxram). Best in Section—Mr. G. Davies (Tropical Aquarium Breeders) Mollie. Characins—Small Characins: 1, A. & F. Staniforth (Cresswell); 2, Miss C. Hamilton (Belle Vue); 3, Mr. R. Collinge (Belle Vue). Large Characins: 1, Mr. A. Harper (Macclesfield); 2, Mr. G. Davies (T.A.B.); 3, Mr. R. Hampson (Ambersough). Best in Section—Mr. A. Harper (Macclesfield). Barbs, Labeos, Sharks—Small Barbs: 1, Mr. F. Gregory (Oxram); 2, Mr. Wilkinson (Halifax); 3, Mr. J. Wood (Heywood). Large Barbs: 1, Mr. Dernie (Worksop); 2, Mr. Taylor (Oxram); 3, A. & F. Staniforth (Cresswell). Labeos & Sharks: 1, Mr. B. Hughes (Belle Vue); 2, Mr. G. Davies (T.A.B.); 3, R. Bower (Oldham). Best in Section—Mr. B. Hughes (Belle Vue). Cichlids—Dwarf Cichlids: 1, Mr. W. Taylor (Oxram); 2, Mr. Dernie (Worksop); 3, Mr. Mawson (Worksop). Large Cichlids: 1, A. & F. Staniforth (Cresswell); 2, Mrs. F. A. Nicholls (Oxram); 3, Mr. R. Hampson (Ambersough). Angels: 1, Mr. Roberts (Barnsley); 2, Mr. J. Wike (Huddersfield); 3, A. & F. Staniforth (Cresswell). Best in Section—Mr. W. Taylor (Oxram). Catfish & Loaches—Catfish: 1, Mr. L. McCourt (Gorton); 2, Mr. H. Stockton (Oldham); 3, Mr. D. Cass (Heywood). Loaches: 1, Mrs. Mabey (Oxram); 2, Mr. R. Hampson (Ambersough); 3, Mr. G. Davies (T.A.B.). Best in Section—Mrs. Mabey (Oxram). Anabantids and Fighters—Anabantids: 1, Mrs. Dernie (Worksop); 2, Mr. K. Hill (Heywood); 3, Mrs. Cass (Heywood). Fighters: 1, Mrs. Mawson (Worksop); 2, Mr. Dernie (Worksop); 3, Mr. G. Davies (T.A.B.). Best in Section—Mrs. Mawson (Worksop). Toothcarps, Rasboras, Danios— Toothcarps: 1, Mr. K. Willesham (Oxram); 2, Mr. C. Walker (Oldham); 3, Mrs. Dernie (Worksop). Rasboras & Danios: 1, Mr. G. Davies (T.A.B.); 2, Mr. C. Walker (Oldham); 3, Mr. K. Willesham (Oxram). Best in section—Mr. K. Willesham (Oxram). Pairs, Egglayers and Livebearers—Pairs Egglayers: 1, Mr. C. Walker (T.A.B.); 2, Mr. J. Wike (Huddersfield); 3, Mr. Dernie (Worksop). Pair Livebearers: 1, Mr. G. Davies (T.A.B.); 2, Mrs. Wolstencroft (Heywood); 3, A. & F. Staniforth (Cresswell). Best in Section—Mr. G. Davies (T.A.B.). Breeders Egglayers and Livebearers—Breeders Livebearers: 1, Mr. Dernie (Worksop); 2, Mr. E. Walters (Huddersfield); 3, Mr. Wilkinson (Halifax). Breeders Egglayers: 1, Mr. C. Walker (T.A.B.); 2, Mr. Dernie (Worksop). Best in section—Mr. C. Walker (T.A.B.). A.O.V. Coldwater—1, Mr. W. H. Smith (Stretford); 2, Mrs. Wolstencroft (Heywood); 3, Mr. Noble (Gorton). A.O.V. Tropical—1, Mr. G. Davies (T.A.B.); 2, J. Healy (Cresswell). Junior—1, Miss S. Davies (Derby); 2, Master Noble (Gorton); 3, Miss F. Walters (Huddersfield).

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THE **Riverside Aquarium Society** held their Annual Show at Blythe Hall, Hammersmith recently. The show was well supported, there being over 300 entries and a special attraction was a stand from members of the Radlett Section of the Fancy Guppy Association of Great Britain.

Swordtails: 1 and 3, A. Welsh (Hendon); 2 and 4, E. Dames (Riverside). Platies: 1, J. Miller (Chelsea); 2, C. Buckland (Riverside); 3, T. Glass (Willesden); 4, R. Cleveland (Riverside). Mollies: 1 and 3, Mrs. P. Boss (Chelsea); 2, J. Stewart (L.T.B.); 4, R. Sanderson (Willesden). Barbs: 1 and 3, G. Forrest (Chelsea); 2, H. Harris (Radlett); 4, R. Sanderson (Willesden). Danios, W.C.M.M., Rasboras: 1, R. Biggs (Riverside); 2, Mrs. P. Boss (Chelsea); 3, H. Harris (Radlett); 4, Mrs. Ayland (Riverside). Labyrinths: 1, C. Buckland (Riverside); 2, A. Jamieson (Freelance); 3, G. Greenhall (Kingston); 4, R. Cleveland (Riverside). Fighters: 1, J. Cardis (Riverside); 2, C. Fullerman (Clapham); 3, A. Welsh (Hendon); 4, C. Buckland (Riverside). Cichlids 1 and 4, R. Cleveland (Riverside); 2, G. Ayland (Riverside); 3, R. Thorns (Hounslow). Characins: 1, Mrs. P. Boss (Chelsea); 2 & 3, G. Bass (Redhill); 4, J. Miller (Chelsea). Corydoras Catfish: 1, Mrs. P. Boss (Chelsea); 2, M. Richardson (Riverside); 3, G. Greenhall (Kingston); 4, W. Sherwin (Willesden). A.O.V. Catfish: 1, C. Buckland (Riverside); 2 and 3, R. Sanderson (Willesden); 4, T. Glass (Willesden). Egglaying Toothcarps: 1, 2, 3 and 4, T. Glass (Willesden). A.O.V. Tropical: 1 and 2, Mrs. P. Boss (Chelsea); 3, Thorns (Hounslow); 4, R. Cleveland (Riverside). Breeders Egglayers: 1, D. Ellis (Kingston); 2, A. Hart (Clapham); 3, S. Harmon (Riverside); 4, T. Glass (Willesden). Breeders Livebearers: 1, 3 and 4, Mrs. L. Brown (Willesden); 2, J. Fordham (Riverside). Common Goldfish: 1 and 2, C. Fullerman (Clapham); 3, W. Leach (Redhill); 4, E. Dames (Riverside). Shubunkins: 1 and 2, R. Wittington (Redhill). Fancy Goldfish: 1 and 3, H. Ennor (Riverside); 2, R. Wittington (Redhill); 4, W. Leach (Redhill). A.O.V. Coldwater: 1, 3 and 4, M. Richardson (Riverside); 2, W. Sherwin (Willesden). Best fish in show: M. Richardson (Riverside).

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A NEW Society has been formed at Swillington (near Leeds) called the **Swillington Aquarist Society**. The meetings are held the first and third Wednesdays of each month at 7.30 p.m. in the County Primary School Swillington. Anyone interested would be welcome to attend the next meeting or contact the secretary, Mr. G. Green, 98, White Cliff Crescent, Swillington.

Crossword Solution

■	O	F	F	I	C	E	■	B	A	C	O	P	A	■
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PREPAID ADVERTISEMENTS—continued from page xiii

WANTED

WANTED. Coloured water lilies, iris laevigata, pomederis and other good class marginals, also large tuberous snails. Highest prices paid for small or large quantities. Water Lily Farm, Chickerell, Weymouth.

APPOINTMENTS VACANT

STAFF REQUIRED in London and Bucks for aquarist's business. School-leavers or older. Live in or out. Experience not necessary. Apply Box 4001, *The Aquarist*, The Butts, Brentford, Middx.

SCHOOL LEAVER. Boy interested in learning trade for Guernsey Aquaria Dept. Apply: Staff Manager, 101, Hatton Garden, E.C.1.

AQUARIST and pet shop in Surrey area requires full time staff. Applicants, who should be over 21, must have sound knowledge of tropical and coldwater fish. Apply: Box 5122, *The Aquarist*, The Butts, Brentford, Middlesex.

REPAIRS

GUARANTEED HEATER REBUILDS, 5s. 6d. each. Send old heaters and state wattages required. New heaters, year's guarantee, 8s. 6d. All by return. J. Weir, 7, The Drive, Welwyn.

Shirley Aquatics Ltd.

WATER PLANT NURSERIES AND FISH HATCHERIES—Phone: SHIRLEY 130

Stratford Road, Monkspath, Shirley, Solihull, Warwickshire

AUGUST 17th OUR NEW RETAIL SHOWROOMS OPEN

Tropical Fishes — All grown beyond size usual in the trade

DISCUS (Wild Brazilian) 3"-6" from **50/- each** to **£15 pair**
PIRANHA (*S. Spilopleura*) 4" Aquarium conditioned **75/- each**
ANALEPS (The curious four-eyes) 4"-5" Limited numbers **37/6 each**
CARDINAL TETRAS 1½" adults **40/- pair** Small fishes **7/6 each**
NEONS (Wild Peruvian) Nicely conditioned **3/6 each 8 for £1**
ANOSTOMUS ANOSTOMUS Fine specimens **20/-, 25/-, 30/- each**
ADULT BLEEDING HEART TETRAS 12/6 ea. ADULT EMPEROR TETRAS 12/6 ea. RUMMY NOSE TETRAS 10/- ea. PLATINUM TETRAS 3/6 ea. GOLD TETRAS 5/- & 7/6 ea. COPPER TETRAS 4/6 ea. LEMON TETRAS (Adult) 5/- ea. ROSY TETRAS 5/- & 7/6 ea. PHANTOM TETRAS 5/- & 7/6 ea. WIDOWS (Large) 3/6 ea. BEACONS 2/6 ea. FLAMES 2/6 ea. BLOODFINS 2/6 ea. BLACK NEONS (Large) 5/- & 7/6 ea.
PENCILFISH—*Anomalus, Marginatus, Trifasciatus* all at 5/- ea.
CLOWN LOACH 40/- ea. BLACK BANDED LOACH 5/- ea.
RED TAILED BLACK SHARKS 5/-, 7/6 & 10/- ea. RED FINNED SHARKS 5/- ea.

GOURAMIS	**Blue** 2/6 ea. **Opaline** 2/6 ea. **Leeri** (Large) 3/6 ea. **Chocolate** 5/- & 7/6 ea. **Croaking** 5/- ea. **Jewel** 5/- ea. **Giant** 5/- ea. **Adults** 20/- pair. **Dwarf** 10/- pair. **Thicklip** 10/- pair. **Kissing** 3/6 ea.
CATFISH	**Leopard** 10/- ea. **Spotted** 7/6 & 10/- ea. **Marbled** 7/6 ea. **Bronze** 7/6 ea. **Banjo** 7/6 ea. **Whiptails** 10/- & 12/6 ea. *Otocinclus* 7/6 ea. *Aymonieri* 5/- & 7/6 ea. **Beautiful Golden *Corydoras Paleatus*** 10/- ea. **Black banded cats** 7/6 ea. **Rabauti** 7/6 ea. etc. etc.
BARBS	ALL THE USUAL PLUS:— **Adult checkers** 7/6 pair. **Hexazona** 5/- & 7/6 ea. **Adult Cherry** 7/6 pair.
LIVEBEARERS	ALL THE USUAL PLUS:— **Adult Green Velifera Mollies** £3, £4, £5 pair. **High Fin *Platy Variatus*** £5 pair.

MARINE TROPICALS PLUS ALL THE EQUIPMENT REQUIRED

All conditioned and able to be fed on prepared foods
All the information needed for successful maintenance available

FANCY COLDWATER FISHES

Home-bred Veiltails, Moors, Bristol Shubunkins, Imported Fantails, etc.
SPECIAL AUGUST OFFER—Young Bristols 5/- ea. 6 for 25/-

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Wonderful bargains in unusual plants for callers
SPECIAL AUGUST/SEPTEMBER—£2 Decorative Collection by Post

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, alight at "The Crown," Monkspath.
HOURS OF BUSINESS—
Weekdays 10 a.m.—6 p.m. Summer, 10 a.m.—5 p.m. Winter. Sundays 10 a.m.—12.30 p.m. (Also Sunday Afternoons May-July Only)
CLOSED ALL DAY EVERY MONDAY
TERMS OF BUSINESS—Cash with order please. Fish sent by rail. Tropical minimum order £7-10s., insulated container and carriage 10/-. Cold water minimum order £5 plus 10/- can and carriage. Plants by post (minimum order 10/-) please add 1/6 post and packing.

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