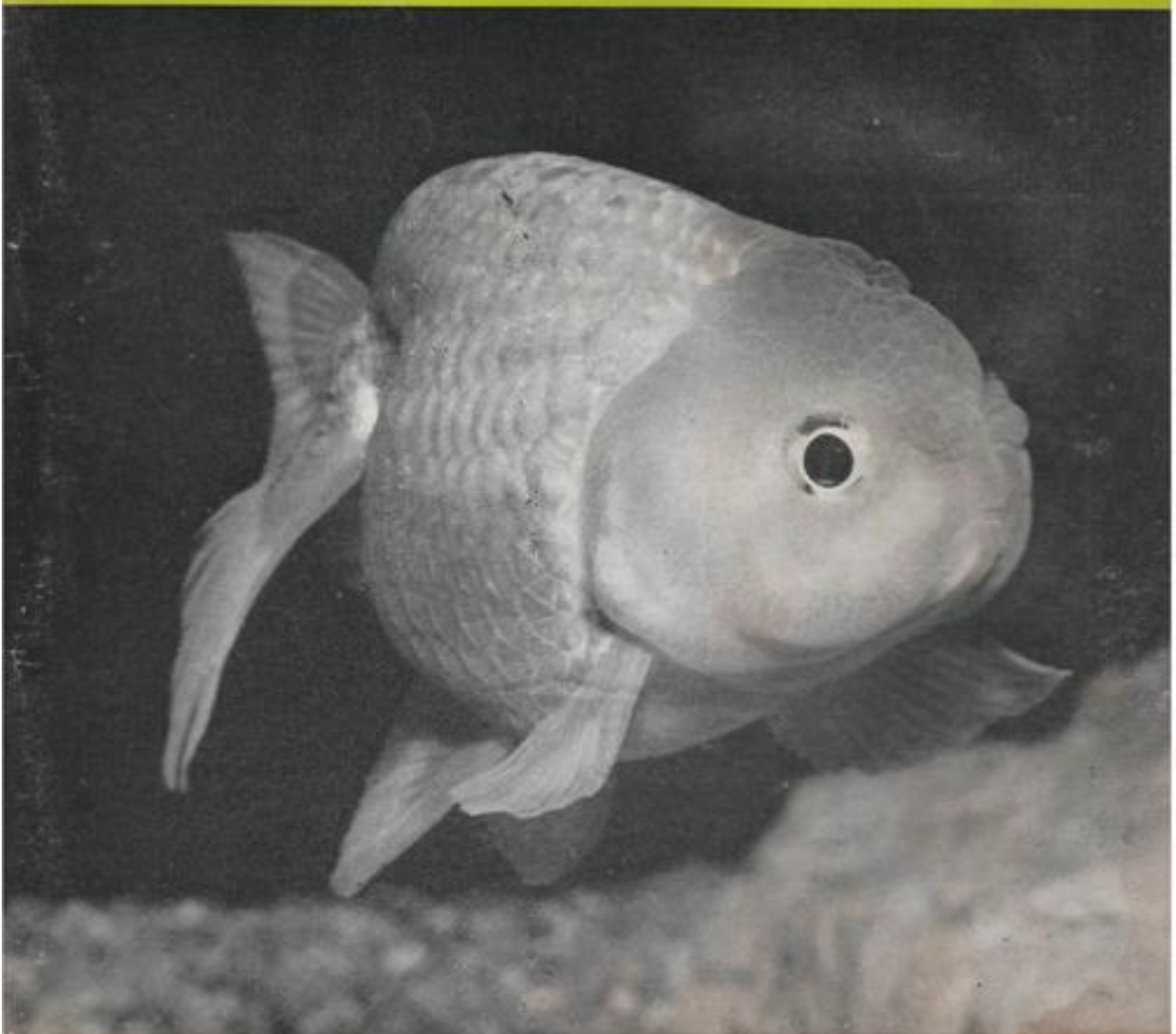


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*Lionhead*

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The Editor accepts no responsibility for views expressed by contributors.

Editor: Laurence E. Perkins

February, 1970

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## Breeding Goldfish:

# Fancy Varieties worth rearing

By A. Boarder

MOST COLDWATER fishkeepers have a preference towards a certain variety of goldfish and it is these aquarists who produce the show specimens and fish worth breeding from. Although it is possible for anyone to breed several varieties I consider that in order to get first rate fish the aquarist should specialise in one particular variety. When this is the procedure one is far more likely to obtain really good specimens than would be the case if several varieties were bred from at the same time. There would be the temptation to cross breed and so produce many fish not worth the food they eat.

If only one type is kept and bred from this will enable the breeder to get to know all the finer points of the speciality and so appreciate better the differences between a good fish and an excellent one. The more one knows of a particular kind the more likely it is that only the very good ones are kept and bred from. It is only after years of breeding and studying

a certain variety that one becomes conversant with all the points necessary for the exhibition fish. In the middle forties there were many breeders specialising in the various varieties and it was then that it was possible to go to a show and see several very fine specimens on the benches. Unfortunately, during the past twenty years the standard of most coldwater fish has deteriorated considerably. One never sees the splendid veiltails and fantails which were in evidence soon after the last war. I have known classes of many veiltails and on one occasion at least thirty-three entries in a fantail class. I feel that this falling off in quality fish is due to the fact that there have been more than one standard for fancy goldfish and so if one did not even know what to breed for it was almost impossible for anyone to produce a specimen fish.

In the past it was possible to be able to name many specialists and if one was asked who to go to for any



Lionhead

A "London Type" Shubunkin



particular variety, it was no trouble to name at least a few breeders who could supply good fish of any variety which would form a basis for a good breeding stock. There seems to be a change coming now among some of the coldwater specialists and it is to be hoped that many more aquarists will concentrate on one variety and become a real expert in that type. I feel that only by doing so will it be possible to get back to the high standards of fancy goldfish which existed years ago.

It is sometimes asked which are the fancy goldfish? The answer is, all varieties excluding the common goldfish. The list then includes, shubunkins, both London and Bristol, fantails, veiltails, moors, orandas, lionheads, celestials, bubble-eyes, pearl-scales, and comets. The specialist breeder should make up his mind which one he prefers and then try to obtain as good a specimen as possible of that type so that he can concentrate on this particular fish. As there is rather a dearth of really good fancy goldfish, it will not be easy for the beginner to find the source of such fish. One very good way for him would be to attend some of the shows where coldwater fishes are on show. It may not be that he must buy from the owner of a first-prize winning fish. There may be several fish in the class from one breeder and it may be from among them that the prospective breeder sees what he is after. It is almost certain that the winning fish will not be for sale but the owner can be contacted with a view to selling some of his stock.

Try to discover if the breeder has an established strain. This is very important as some winners

may have only bought the fish they have exhibited recently and may not have an established strain at all. If it is found that the fish preferred have come from a strain which has been established for a number of years it is almost certain that any decent fish from the strain would be likely to produce some equally good fish and even some which were better. A prize winning fish could be worth a lot of money or if not the owner might have a price in mind out of all proportion to the worth of the fish. Again it is not by any means sure that the prize winning fish will throw fish as good as itself. This is just a chance, but any fish from a really good strain which has been established for several years is quite likely to breed some excellent fish. The prize winner may have been just a lucky break from a strain which had not produced many other good fish and so would not be as likely to give good results as a fish which was from a good strain which had given many winners in previous years.

Before starting on obtaining breeding fish the aquarist must realise that even pairing two first prize winners may only produce a very few really good fish. When considering the breeding of most of the fancy goldfish one must understand that only a very small proportion of the youngsters are likely to make winners. This variation is particularly noticeable when dealing with the double-tailed varieties. Among a spawning of fantails or veiltails from excellent parents it is possible to obtain many single-tailed fish, many with web-tails and some with tri-tails. It will even be found that from the same parents it is possible to get all these varied types

from one spawning and yet from another spawning from the same parents a much higher proportion of good fish may be obtained. One thing must be borne in mind; it is that all the fish from one strain can carry the genes of inheritance and so even if not good specimens themselves they are capable of producing some fish at least as good as any others in the strain and possibly some which are better than any previously bred from the good parents.

Therefore do not go to a breeder and ask for a pair or so of his best breeders, he might ask a ridiculous price for them or not want to part with them. Do have patience and endeavour to get a few decent fish from the strain and then breed from them. In this way it will be possible to get some fish among the youngsters which will form the basis of the breeding stock you require. It may take some years

you with the rest to eat their heads off. You will learn in time, that the only buyer worth troubling with is the man who comes to you and says that he wants a number of fish and is prepared to leave the choice to you. You can then get rid of some of the imperfect ones, but you can also include some very good specimens worth far more individually than all the others he has taken altogether.

The late Arthur Dereham used to tell his callers that they could have the "run of the net" for so much and if they did not agree he had no time for them. I wish I had his courage at times, as after a session with a prospective buyer who has sorted over a hundred fish for the best two and taken up a couple of hours of my time, paid me ten bob and left, I have felt like putting the rest in the bowls down the drain.



Bristol Shubunkin

before you can really be in the position to breed several show specimens, but when you do you will have far more satisfaction than if you had bred some species of tropicals which turn out like peas in a pod. Unfortunately you will find that if you do just this and win a few prizes people will come to you and expect to buy some of your very few fine specimens for a shilling or two.

You will have the caller who only wants to get a few of your strain and is not at all particular if a fish has a faulty fin or other slight irregularity. He will say that he only wants to get your strain and then when he is shown some really good fish he goes over them with a fine-tooth comb, and if he sees the very slightest kink in a fin he will turn it down. In the end he buys two of your better fish and leaves

Before actually going to buy some fish one must know what one is after. Study the particular variety well beforehand and then if a number of youngsters are seen from a good strain, try to get some with the special points you are looking for. Perhaps one will have a type of tail you are looking for, whilst another has an excellent dorsal fin. The depth of body among the youngsters will also vary a great deal and so try to find the one with the best body even if it has not as good a dorsal or tail as others. By doing this you are likely to procure a number of fish among which are the special points you want in your strain and providing you take some of the slightly inferior specimens you are more likely to be given one or two really good ones among your purchases.

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## *Junior Aquarist*

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# four easily recognised LEECHES

By Bill Simms



THE PERSON who finds a leech attached to his foot after walking in a pond will not really care which kind it is. The urgent desire will be to get rid of it, at once.

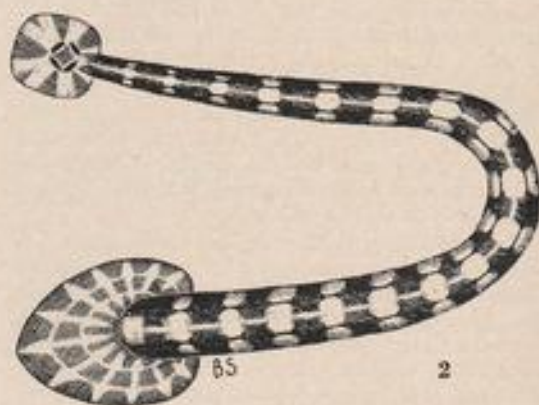
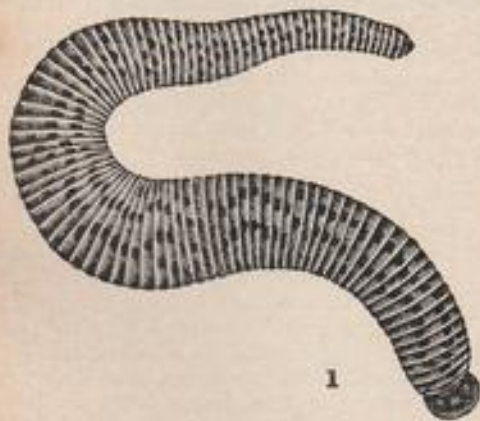
To the aquarist, however, the matter of identification is rather more important, for he may come across one swimming or crawling in his aquarium, and will wish to know if it had done any harm.

There are more than a dozen kinds of leeches in our waters, and because they can be very small when young, they can easily be transported with water plants. Some kinds never grow to more than half an inch long, but others can be six inches or so.

All leeches have their head at the thin end. The broad end is their posterior anchorage. To move around on an object they progress by gripping with one end and looping to place the other end near the first. Some leeches can swim freely in the water and do this by undulating the body.

Animal matter, including blood, of course, is the sole food of leeches. Some leeches also feed on solid matter, and to do this tear out small pieces from their victims. All sorts of creatures serve as food for these creatures, including man, if they can get a grip on him.

The blood-suckers have a specially formed gut in which there are many small cells for storing the blood they imbibe. Because of this they can live for about twelve months without any more food. This is why the old-fashioned Doctors were able to store them so easily. If you decided to keep one as a pet its upkeep would be quite simple. Just a jar of clean water, and a feed on your arm or leg on Boxing Day each year—when your blood was nice and rich after the Christmas dinner.



Leeches are hermaphrodite, which means that they can mate in pairs—each carrying both sexes—as worms do. They can also practice self-fertilisation, so that any leech found on its own in an aquarium can quite easily produce young.

All the eggs are placed in capsules within which the eggs hatch out. But the method of placing the capsules varies with the different species. Some fasten the capsule to water plants and then remain near them until the young hatch out.

In other species the eggs are fastened below the parent and carried around until hatched. Even then the young do not fend for themselves at first but are carried around by the parent while clinging to special protrusions on the mother.

Of all the dozen or so species, *Piscicola geometra*, the Fish Leech, is the most distinctive in appearance, for the suckers at each end of its body are flattened, and larger in diameter than the body.

With the large end anchored to any fish, this leech can move the head end around on the fish to find a fresh feeding ground. When that area is exhausted the head is stretched out, takes a hold, and then the rear end is released to obtain a fresh grip near its head end. In doing this it looks just like a "looper" caterpillar, a motion that has given rise to its second name of *geometra* (measurer). It can stretch out to about four inches, and then appears quite slim. When at rest it becomes more cylindrical, with its body length about ten times that of its diameter. In addition to its distinctive sucker appearance, this leech is marked with dark and light patches of greenish-brown. It swims easily.

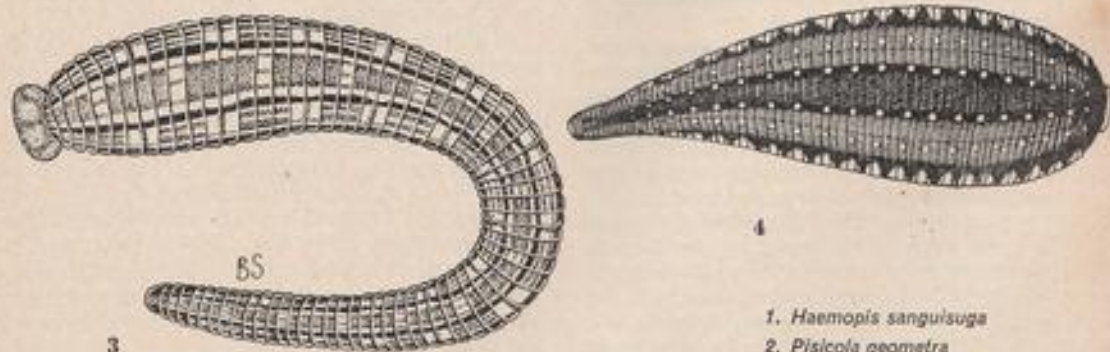
One of the leeches that cannot swim is *Glossiphonia complanata*, which feeds on worms, insect larvae, and snails. It is found in both still water and slow

streams. Its power of gripping is strong, and needs to be because it sometimes moves across the bottom in faster water. In the drawing it is shown bunched up, but when stretched out it is only about one and a quarter inches long, so it is quite moderately sized. Its colour varies somewhat, ranging from green to brown, but location of its markings, particularly the dark central patch and the rows of light spots, are usually the same in most specimens.

A rather repugnant sort of leech is the one that is called the Horse Leech, *Haemopsis sanguisuga*. This, also, can be found in still and running water. It can tear lumps from its victim, and consumes entire such creatures as small worms and insect larvae. The underneath parts are yellowish-grey with black spots (an unpleasant colour), while the back is brown, grey, or near black, with darker spots on it. This leech is common and can be seen often swimming in clear water. Its length varies with age, but a full grown specimen can reach to six or more inches when fully extended.

The leech that gave a name to the old-style Doctors (Leech) is *Hirudo medicinalis*. This one does not favour running water, and appears to prefer moorland lakes and ponds. Its size is about six inches, and its underparts are coloured similarly to the horse leech. The upper parts, though, are not so dull, for it is dark green, with reddish-yellow bands and black spots. Its markings are sufficiently distinguished to identify it easily.

Being able to swim as well as to crawl by looping this leech can move around fairly freely. The young feed at first on insect larvae, then graduate to fishes, frogs, and newts as they grow. Later the fully grown adult leeches will feed on mammals for preference, attaching themselves to anything that enters the water.



1. *Haemopsis sanguisuga*
2. *Piscicola geometra*
3. *Hirudo medicinalis*
4. *Glossiphonia complanata*

# All about BRINE SHRIMPS

by Bill Simms

THE BRINE SHRIMP is such a convenient form of live food for tropical fishes, and is so easy to hatch and prepare, that I was surprised the other day to meet someone who told me that he "couldn't get along with them". After a number of questions I found that he was doing two things wrongly: he was using plain sea-water and he was not warming the water. Surely these faults are glaringly obvious, but it occurred to me that the successful users of brine shrimps are taking too much for granted about the ease of hatching them. They are using a familiar system (to them) and too few instructions are being passed on.

Let us deal first with the reasons for using brine shrimps as live food. A tiny form of living creature is the most natural food for most small fishes and some fry, and there are many kinds that can be used such as daphnia and bloodworms. But the only kinds that are sterile and cannot carry pests and diseases with them, and that are small enough for fry, are the brine shrimps. This is because they are hatched directly from eggs in strongly saline water that is made up from clean water and salt as we need it.

In their newly hatched condition the brine shrimps are rich in minerals and good food value and like all the crustacean family, are well liked as food by fishes. There is just one minor snag to them, though. They carry so much salt that if fed exclusively to baby fishes they can do harm by filling the baby fishes with salt. For fry, one good meal of brine shrimps twice a week is generous, and I would be inclined to make it once every five or six days.

The brine shrimp is a relation of the shrimps and prawns in our seas, but it cannot live for long in the sea. It requires water that is carrying much more salt than sea-water. So much more, in fact, that the quantity of block-salt you should add to fresh water to make up the correct concentration is only a little more than that needed by sea-water to make the same solution. In addition, the brine shrimp, though found in many parts of the world, always lives in water that varies in temperature between about 62 and 88 degrees F. Consequently, the eggs will not normally hatch out in water at room temperatures. The ponds and lakes in which they are usually found are often fringed by salt crystals, caused by the warmth quickly evaporating the strongly saline water.

For the aquarist with just one tropical aquarium

who intends to use brine shrimps just once a week—a good routine—the simplest method for hatching the shrimps is as follows.

Half fill a one pound jam-jar, or similar container, with tap water. Into this place a flat dessertspoonful of block salt. This must not be table salt, but that used for cooking. Then float the jam-jar of salty water in the water of your aquarium for it to warm up.

After some hours this salty water will be the same temperature as your tropical water, and ready for the eggs. Scatter a good pinch of the dried eggs on the salty water where they will hatch in about 36 hours at normal tropical temperatures. At 65 degrees they take 50 hours or so, and at 85 degrees only 24 hours.

The first time you hatch out brine shrimps you may fail to see them, they are so tiny. Just a small cloud of dancing motes showing faintly against the light. So use a magnifying glass to watch for them until you are more experienced.

Having located your brine shrimps it remains only to offer them to your fishes. Have another jam-jar handy, and place a handkerchief across the open top. Make a slight dip in the part over the top of the jar, and pour the entire contents of the salt water jar through the handkerchief into the jar.

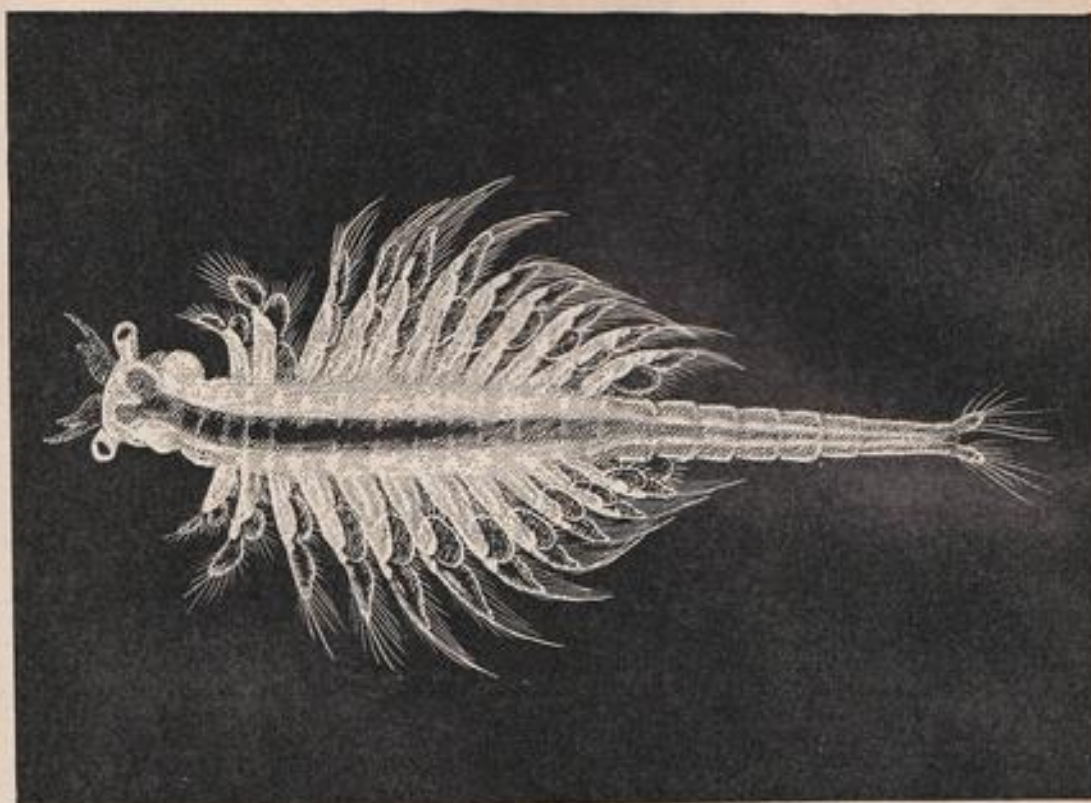
All the shrimps, and the empty egg shells will then remain on a small wet portion of the handkerchief. With a finger poke this patch into your tropical tank, and wash the little creatures off. Your fish will take no time at all in coming up for the feast.

By this method you will also place the empty egg shells in your aquarium, but I have never found that this causes any trouble unless you are using too many brine shrimps, too often. In that case you would be introducing too much salt, and that can be harmful. A more meticulous method would be to syphon the newly hatched brine shrimps out of the jar, and then through the cloth, so that you avoided picking up the empty egg shells, which always float.

Make a new batch of salty water each time you hatch a new batch of shrimps—salt is cheap—and you should have little trouble making regular weekly offerings of live food for your fishes.

The more advanced amateur who requires a larger and more frequent supply of live brine shrimps will have no difficulty in adapting some larger container





for the purpose. The only firm rules are saltiness and warmth.

The brine shrimps can be grown into larger sizes to make more meaty meals for larger fishes, too, and the method is almost as simple.

The main food of brine shrimps is algae. Therefore set up a container in a position where it can get plenty of light, and sunshine, if possible. This must be capable of holding salty water, so should be glass or plastic. I have found that a large goldfish bowl is admirable—and it is cheap.

I mounted mine on a box, within which was a 25 watt bulb. There was a hole in the top of the box for the warmth to come through, and this provided enough light to start the algae growing. I use a 3-inch depth of salty water.

When this warmed salty water shows plenty of green algae growth, introduce some well-branched twigs, anchored down, on which more algae can grow. Wait for these to green over a little, but if they are slow try some mild aeration.

Then introduce a goodly pinch of the dried eggs, and wait for the baby shrimps to appear. In this very natural environment they will quickly start to

feed and grow, and soon they will be big enough to be seen rowing about. They always keep their abdomen to the light, so in a bottom-lit bowl they swim upside down.

Adult brine shrimps are about half an inch long, and are like the one in the drawing. Their colour is pale pink to red, and this gives some help in the future salt mixing, for when the concentration is stronger the colour is more red. My first attempt produced very pale pink shrimps, so I then used more salt. Incidentally, do not forget to top up any evaporation with warm tap water from time to time. A black line drawn on the bowl outside at the original water level is a good guide.

When grown in such conditions as these your adult brine shrimps will probably increase. Although male and female brine shrimps mate and then produce fertilised eggs, the females, if unattended by males, can also produce eggs that will hatch when unfertilised. The babies become adult in about three weeks under ideal conditions, so that once you have established a colony in a fairly big container—with plenty of algae—you can rely on a constant supply of brine shrimps of all sizes.

Concerning the behaviour of *Serrasalmus nattereri*

## Experiences in keeping Piranhas (Part 2)

by William Mellor

TOWARDS THE END of October I put bog peat in my filter to provide the piranhas with more acidic, peaty water than before; unfortunately, I hadn't washed the peat enough and the water became very muddy. During this period the piranhas' colours became very strong and they bit each others fins and ferociously ate any goldfish I put in the tank. After two days of filtration the water cleared.

Under the above conditions the piranhas behaved perhaps more naturally than ever before, thus indicating the way in which piranhas should be maintained in captivity. They are now over seven months old, 3½ inches long and their bodies are getting much darker, belly redder and teeth more prominent. After a feed of goldfish the belly loses much of its reddish tinge, only returning after 2-3 hours, possibly indicating the time needed to digest a meal of fish. When they were 3 months old I fed them raw liver at 8 a.m., and they weren't hungry again until 4 p.m.; when I fed them raw haddock at 8 a.m. they were hungry again at 12 a.m. In T.F.H.'s excellent book "Piranhas, fact and fiction," Harald Schultz wrote "in nature piranhas are always hungry;" this indicates that fish is the main food of piranhas, and also bears out my own observations. My own fish won't even look at meat, i.e., liver, ox-heart, steak, etc. This seems rather obvious, as piranhas live in water therefore other fish would constitute the major part of its diet.

In its native waters a piranha would probably bite at anything that represented food since it wouldn't know where its next meal was coming from; Amazonian waters are reportedly teeming with fish and other aquatic life, so that competition for food must be tremendous; however, when a piranha is kept in captivity it will only eat that food which is most acceptable and natural to it; and that food I have found to be fish. Harald Schultz writes "the main nourishment of piranhas is flesh." The word "flesh" has, understandably, been mistaken for, and understood as, animal flesh, when the author obviously means fish flesh.

On the 8th November I put some gravel and plants in the piranha tank (vallis., cabomba, Indian fern), so that it was well planted; the fish started hiding among the plants, their colours faded, and they ate less than usual. I persevered with this set-up for a week during which the piranhas' health deteriorated. I finally removed all the plants except for a half dozen small

Indian fern; the piranhas immediately began swimming to and fro and ate five goldfish an hour later. This indicates the type of set-up they prefer and should be kept in; my tank looks rather bare, but my fish prefer it that way. Recently I removed the 40 watt Gro-lux and substituted a 40 watt warm white tube painted black; this gives the water a brownish yellow tinge, and the piranhas prefer this subdued lighting.

At the end of November I ran out of goldfish and decided to see if the piranhas would still eat raw liver and haddock; they refused the liver, but gorged themselves on haddock. As a result, I have been feeding them on haddock for the past two weeks; they also like sprats (small saltwater fish bought from the fishmonger) but this food is rather oily and messy. Perhaps I will revert to feeding them haddock with just an occasional goldfish; it's certainly cheaper. The piranhas are now over 8 months old and about 3½ inches long. Water temperature 76 to 78 deg. F.

Lately I have been trying to sex them; their behaviour resembles a combination of a typical cichlid and a typical characin. When disturbed they gather together like a flock of sheep, trying to hide behind each other in a corner or rushing from one end of the tank to the other; occasionally, however, when undisturbed, one piranha will occupy each rear corner of the tank and the other three will station themselves in the middle, thus making up three "sections;" however, the middle fish only have an area of 10 inches by the width of the tank in which to swim; if they move out of this area the respective "corner" piranha snaps at them and chases them back to the middle of the tank. The left-hand corner fish sometimes wanders across and fights with his opposite number, but soon returns to his "beat;" he is the smallest and toughest of all five, and seemingly the most attractive to the "females" in the middle who joust each other to catch his eye; however, he still snaps at them if they come near. These episodes happen mostly after the piranhas have just been fed.

The "males" are slightly slimmer than the "females" but this is hard to spot when they are swimming tightly together; the adipose fin of the males has a dark spot at the base, very close to the body; the "females" also have this dark spot but it is more silvery, speckled.

Of course my piranhas are only 3½ inches and

Continued on page 329

# Salvinia auriculata



by Bill Simms



ONE of the most interesting of our tropical floating plants is *Salvinia auriculata* (the small-eared *salvinia*). But it can be viewed with disfavour at times because it cuts off so much light from plants below it. However, it is easy to remove from any aquarium so that just a few of the plants are left and it does have some virtues. Among these is the mass of root-like appendages that hang down into the water. These brown feathery growths are not roots but modified leaves, adapted for underwater living. At each node of the stem there are three leaves, two of which are the floating ones, and the other is divided into the brown threads that look so much like roots.

In the shade of these submerged threads fish fry, and other small water creatures, can take refuge. For some kinds of fishes the *salvinia* is a perfect top cover when breeding for they love to spawn there. Bubble-nest breeders frequently incorporate the plant into their nests to make them stronger.

*Salvinia* is a water fern and produces spores at the base of the submerged leaves at times. Very little appears to be known about the development of these spores at present, and this plant would be a good subject for research by anyone with the necessary equipment.

Ponds and other forms of stagnant water are the habitat of *salvinia* which is why it does so well in aquariums. It must have plenty of light, though, for it is used to bright sunshine. It is found in Central and South America in the tropical areas.

When grown in partially shaded conditions this plant develops much smaller leaves. That is why, when we purchase large-leaved plants (that have probably come from a greenhouse) and place them in our moderately-lit aquarium, we are disappointed to find the plant deteriorating—as we think. It is merely a natural reaction. Many of the forms of *salvinia* described under different names are merely shade varieties.



The ordinary aquarium is not the best place to grow *salvinia* for itself, though it does fairly well there. In a wild state it prefers fairly shallow water that is cloudy with decaying plant particles and lots of infusorians. Our clear water aquariums are a compromise.

Temperature range is 68 to 78 degrees F., which suits our tropical fish conditions, and a neutral pH value is best. Where extra top light can be given, and where a cover glass is used to ensure humid conditions above the plants, the *salvinia* will thrive in most aquariums—though usually with the smaller leaves.

If you can site your aquarium in a greenhouse, and allow them a fair ration of sunshine, these plants will multiply very rapidly. Then they become so crowded that eventually they are overlapping each other, but the plants underneath will not be doing so well.

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## Experiences in keeping Piranhas

continued from page 328

possibly not yet mature enough to display any definite sexual differences or forms of courtship; different reports from different sources will need to be studied before any standard pattern is established; only in this way will anything about these fish be discovered. Also, any information written must state whether or not the fish or fishes concerned were kept isolated or maintained with others of their own kind; obviously the latter method favours a truer and more accurate observation. Unfortunately, the reputation of piranhas encourages anyone tempted to buy them to keep them separated for fear of them injuring each other; space to swim in and suitable food are the main problems; I hope that what I have written will alleviate these problems and thus lead to a better understanding of these interesting fishes.

# From a Naturalist's Notebook

By Eric Hardy

WE WERE ALWAYS taught that aquatic insects obtained their oxygen either by direct contact with the air at the surface, like the water-scorpion's tube-like appendage, or by filtering it from the water with gills, like dragonfly larvae. Now F. D. Houlihan has described to the Zoological Society his discovery that several aquatic insects make use of the roots of reed-grass, rushes and reed-mace to obtain some underwater oxygen. They pierce the gas-spaces in these roots. This apparently occurs in muddy haunts. The insects he worked on were not, as one might have expected, the bugs with such suitable mouthparts for piercing the tissue, but the larva of a drone-fly and the aquatic larva of a sandfly. One of the characteristics of aquatic plants is their large, intercellular air-channels, especially in *Glyceria*, one of the plants used by these insects.

There has been much reference in recent scientific press to the predation by spiny starfish on the marine life of the famous Australian coral-reef, the Great Barrier. The great spiny starfish *Acanthaster planci* is equally predatory upon the corals in the southern Red Sea, as Goreau showed in the Israeli Red Sea Expedition of 1962. This was the first evidence of animals other than coral-browsing fish feeding on the soft parts of living corals, though some polychaete worms are sort of part-time pests. Earlier still, before the war, Mortensen showed that this same starfish sucked off the softer part of corals in Java, and left only the white skeleton. It is a nocturnal feeder. It embraces the coral with its arms and everts its gastric sac through its mouth, then emits a slimy mucus and in three hours has dissolved and imbibed the coral polyp. In some areas it controls the growth of coral-reefs.

Plant-hunting, land or water, is time-consuming and energy-destroying hard work. When it has been a lifetime's often wasted energy it is all the more irritating to find incomplete histories of plant-distribution, called local *Floras*, being published at great expense without any real effort to make them as complete as they reasonably could have been, with all reasonable liaison among local field-workers. Not that they should include any and every "record" without confirmation of site or specimen. No single person, however brilliant a botanist, can know all the plants in a county. Through such "closed shop" botany in the N.W., the £5 *Atlas of the British Flora* appeared in 1963 omitting over 150 plants (over 50 of these of major interest) from Lancashire, Cheshire

and North Wales' 10 km squares, used as the basis of recording. Sixty-five were omitted from Cheshire squares.

Everyone who does not harm aquatic plants has equal right to study them, especially conservationists. When the *Flora of South Lancashire* was published with a £400 Royal Society grant in 1963, I pointed out in a review that 320 stations could be added to 199 of its scarcer plants whose localities it claimed to list (like the small-flowered marsh-marigold, *Caltha palustris minor*, at Melling in 1940 and sweet flag in the Summit Canal at Walton le Dale)—42 more species could be added to its list, mainly aliens but all more authentic than the Formby lizard-orchid it included without reserve, though that was seen only in a local flower-show and never found by years of subsequent searching of the reputed site. This would have been avoided if many field-records and herbaria specimens available with the largest local natural history and aquarium societies and long-experienced field-workers had even been examined. But they weren't asked for, and thus not submitted.

Some plants it gave "extinct," like great sundew and royal fern in Knowsley Park and marsh-St John's wort at Halsall, had relict survivals unnoticed. Water-avens continued to grow at Childwall 40 years after its last record; but neither sweet flag nor yellow water-lily are anything like as "frequent" in South Lancashire as the *Flora's* generalisation implies. Yet these works are quoted as if they were the last word.

The *Atlas* equally lacked co-ordination of field-records, omitting in its period the little water fern *Azolla filiculoides* from Cheshire sites at Bidston, Meols, Aldersey and Eaton Park, royal fern from 3 Wirral sites (at least one self-seeding in a damp, dark railway-cutting), and maidenhair fern from another; spiked watermilfoil in Wirral's Meols Pond; water-violet unmapped in Cheshire though I have seen it at Frodsham, Great Saughall, Shotwick, Mickle Trafford and in the Shropshire Union Canal; water-soldier at Childwall and Formby though unmarked in S.W. Lancashire and small bur-reed at Willaston though unmapped for Wirral. Shoreweed still grows in Knowsley Park, though unmapped in the *Atlas* and "extinct" there in the *Flora*.

The reddish pondweed, *Potamogeton alpinus*, was discovered much earlier at Formby than is stated—

Continued on page 331

# A Poor Man's Marine Aquarium

by Kathleen Cooper

THE IDEA OF keeping marines excites most aquarists sooner or later. However, as with colour television, it is the expense which holds most of us back.

When I moved to the seaside several years ago, I made one or two unsuccessful attempts with crabs and shell-fish in natural seawater. Alas! it always turned black after a few days. The oil pollution around the coast made natural seawater impractical.

More recently I decided to have another go; this time with fish and synthetic seawater. My son, who is a keen angler, had told me that he often came across small fry in the little pools left when the tide went out.

I happened to have a small (two-gallon) plastic tank, so I purchased a hydrometer and a packet of Tropic Marine Salt. I had no other equipment as I simply could not afford it. Here and now I must stress that this is the reason why I kept only fish which I acquired free from our own coastal waters. It would be foolish to attempt to keep expensive coral fish without the proper equipment, unless, of course, the loss of a fiver or two means nothing to you, in which case you could presumably afford the necessary gear to keep them properly.

Having acquired the salt, etc., I now waited for my son to produce the fish. This took some time as he only seemed to see them when he was bait-digging and usually he would be digging in all the wrong places.

One day, however, he rushed in excitedly holding a plastic bucket with about an inch of seawater in it. Swimming around and looking a bit the worse for wear, were five tiny smelt. I hastily filled the tank with tap-water, adding a little warm water until it was the same temperature as the seawater in the bucket. Yes, I know I should have done all that days ago, but

busy Mums don't get much time for mucking about with fish.

Next I added the salt, a little at a time, swishing about vigorously until the hydrometer read 10.25. It should have been freely aerated and filtered for several hours, but I did the best I could, churning it about with the aid of a jam jar. Also, the entire packet of salt should have been dissolved into a solution and then a little measured off into the tank, but I had no vessel handy and this was a rush job. My son was doing his nut and urging me to hurry up as the fish couldn't last out much longer. Finally, operations were completed and the fish were transferred to the tank.

At last we could take a good look at them. Brilliantly chromium-plated splinters which glistened and gleamed as they swam backwards and forwards along the tank in close formation. They devoured live brine shrimp eagerly and also took dried fish foods. In fact we soon discovered they would eat practically anything. They soon became quite tame and now nearly go berserk whenever anyone approaches the tank, obviously expecting to be fed.

After about three months, brown algae began to grow on the sides of the tank and this has to be removed quite frequently as it is unsightly. Occasionally I churn the water about a bit to aerate it and now and again I pour it all slowly through a tissue held over a plastic bucket to filter it. The filtered water is then poured back into the tank.

I am now waiting for the warmer weather, when my son has promised to bring me some brightly coloured wrasse and some tiny flatties. This time I shall try to be a little more organised.

## From a Naturalist's Notebook

continued from page 330

by Skellon on North Formby Moss in 1851; but elsewhere the book constantly misquotes this pioneer field-botanist as Skelhorne, repeating the confusion of earlier local *Floras*, and a street in Liverpool. One can add Leigh Flash and Formby Hall to locations listed for the lesser pondweed *pusillus*. A 1939-40 site at Cuedley can be given for the coiled pondweed, *Ruppia spiralis*, for which the *Flora* has only extinct last century locations, while the Reddish canal given for the naiad, *Najas graminea*, has been filled in. Several sites could be added to the list of locations for some of the rarer sedges. The late J. D. Massey's find

of the rare slender spike-rush, *Eleocharis acicularis*, with me in Knowsley Park in 1939 isn't included, probably because no other botanist has visited more than a limited area in this vast park. Six more south Lancashire sites could be added for the uncommon arrowhead. The first record of floating water plantain, *Luronium natans*, was not only Droylsden Canal in 1939, for Massey showed it to me in Rufford Canal the same year. Though unmapped for Wirral it was in the Mollington Canal pre-war.

Not everyone can afford the second editions that bring such books up to date. They usually appear only once in a generation, so if the empire-builders paused in the first instance and put botany first, some of us might be more enthusiastic.

# THE EMPEROR TETRA

By Jack Hems



FEW TROPICALS ARE more deserving of praise and attention than the emperor tetra, that is heavier in the body than the general run of smaller characins we know and has no adipose fin. This fish is native to Colombia, and was given the formal name of *Nematobrycon palmeri* by C. H. Eigenmann, a distinguished American ichthyologist, more than half a century ago. But be this as it may, it did not reach the tanks of hobbyists until the early 1960s. Not surprisingly it achieved instant success as a home aquarium fish. The reason is not far to seek; for, apart from its outstandingly handsome appearance and peaceful disposition, it is quite hardy within its temperature range of from about 68°F (20°C) to 86°F (30°C) and is easy to feed on anything alive or dried. Furthermore, breeding it has no special difficulties.

The body of the male is a silky olive on the back shading through beige to ivory white on the underparts. A velvety black band extends from the blunt snout to the root of the tail, where it narrows and continues like a dark sword on to the extended middle rays of the trident-shaped caudal fin. Posteriorly this black band is edged along the top with fugitive tints of metallic red to blue. A narrow black line above a sulphur-yellow bottom margin is present in the long-based anal fin. The outer rays and points of the caudal lobes are dark too. As though this is not sufficiently attractive to look at, the dorsal fin is sickle-shaped with a dark leading edge, and a green-blue sheen shimmers on the gill-covers and shoulders. Perhaps the most distinctive feature is the eye, for this has a black pupil and a shining blue-green iris. The female is noticeably smaller than the male—he attains a length of about 2-2½ in.—and the middle rays of her caudal fin are not prolonged beyond the web of the fork. Her body colours, however, are similar to those of the male, but lack some of their depth and iridescence.

The emperor tetra is not a shoaling species, but if two or more are introduced into a tank they invariably indulge in spirited chasing every time they meet. If both sexes are present it is always the male who does the driving. Sporting takes place in all levels of the water, and there is a continual coming and going in the plants.

The spawning procedure of this species follows the

general pattern of other egg-scattering tetras. That is to say, there is a lot of fin-spreading on the part of the male, followed by wild chasing. These bursts of activity always end in the plants, where the amber-tinted eggs are laid. The eggs are not strongly adhesive, and many of those that fail to adhere to the vegetation will hatch satisfactorily lying on the bottom, provided conditions are right. The fry are quite large, as fry go, and infusorians followed by such things as brine shrimps, micro worms, and sifted *Daphnia* suit them well.

A pair of emperor tetras will chase and lay eggs even in a thickly populated community tank, but to breed them or, put in another way, raise a number of fry to adulthood, the following points must be observed. First, a fairly spacious tank is necessary. Nothing smaller than an 18 in. by 12 in. by 12 in. will do. The tank, plants and compost must be scrupulously clean. It is worth the effort to try to obtain a calcium-free compost, that is, say, a fine silica or granite grit. Plants with lacy or feathery foliage are the best to use.

The brood-fish may be brought into prime breeding condition in a community tank by feeding more and richer food than usual. Alternatively, they may be transferred to the tank set aside for spawning and then kept separated for a month or two by a glass divider. Separation of the sexes combined with extra attention to their diet will almost always result in a female filling with roe or spawn, especially if she can see the male displaying through a clean glass screen.

The temperature of the breeding tank should be raised to about 78°F (26°C) after the fish have been placed in it. Removal of the glass divider early one morning should set them off. If they do not spawn as planned, then just repeat the procedure outlined above all over again. For, sooner or later, unless there is something very unusual about them or the tank they are inhabiting, they will spawn. It is of paramount importance to remove the spawned-out fish from their eggs as quickly as possible, for like most fishes, the emperor tetra is an avid eater of its own eggs and fry. Ordinarily the eggs incubate in two days, and the fry tend to flit and play in the plants rather than swim in open water. With a plentiful supply of the right sort of food, they grow rapidly and show patches of colour within the space of ten weeks.

## British Freshwater Fishes

# THE TENCH (*Tinca tinca*)

By A. Boarder

THE TENCH is a favourite fish with most aquarists and pondkeepers. It is not normally a fish which will attack other fishes and so is often used in the pond as a scavenger. This fish is easily recognised as the body is covered with numerous very small scales which give the fish the appearance of having no scales at all. There are two barbels under the mouth which indicate that this fish is mostly a bottom feeder. The fins are more rounded than those of most other British freshwater fishes and this is another feature which distinguishes this fish from others. Tench prefer still waters and those with a good base of mud or mulm are preferred. For most of the year these fish frequent the lower levels of the water but on warm days they may be found lying just under the surface beneath a water lily leaf.

The Tench is normally a slow-moving fish, but when spawning or caught on a rod and line it can become a very strong swimmer and is quite powerful. Although it feeds mainly at nights it will take food at all times of the day when hungry. It takes most types of food usually given to goldfish, and in nature takes a large number of insect larvae and crustacea. In the garden pond it will eat water snails and can crush fairly large ones or suck them out of their shells. Garden worms are a favourite food for the Tench and these are rarely refused at most times of the year. However, the fish does become very inactive during cold spells and may not feed at all once the water temperature drops to 40°F.

The Tench is one of the latest spawners among the British freshwater fishes. It is stated by some writers that it will spawn between April and August, but my own observations tend me to consider that few Tench spawn before early July. As this is after the normal close season (15th March to 15th June inclusive) I do feel that Tench should not be fished for until a rather later date. I first bred Tench in my garden pond in 1947, and have done so many times since. What came as a surprise to me was that the young ones hatched then spawned themselves two years later. They had been well fed and looked after but I did not imagine that they would have been large enough to spawn by that time. Three of these fish were kept by me for some years and when too large for my pond were presented to the aquarium at the London Zoo.

The Tench can grow to a fair size as one of 9 lb. 1 oz. has been caught. However, any angler would be pleased to take one over 5 lb. I remember many years ago fishing in

Tring reservoirs for three days with only one bite, but this produced a three and a half pound Tench, which to me was worth all the waiting. It is usual to find the larger fishes in the larger waters and the amount of natural food to be obtained must also regulate the growth. I am of the opinion that the ultimate size of a fish can be determined to a great extent by the first few weeks of life. If any fish finds plenty of food in the early stages it can grow apace whereas if one is stunted through lack of food or space it may never make as large a fish as the former one.

It used to be thought that the Tench had some healing properties which would cure injured or diseased fishes by a touch and it earned the name of "Doctor" fish. There is no truth in this statement and many pondkeepers have introduced diseases and pests into their ponds with Tench caught in the wild. However, I have never found the Tench to interfere with fancy goldfish in the pond and it may be used as a scavenger with confidence, although I consider that the goldfish is just as good a scavenger if it is not fed too much. Fair-sized Tench can be a great attraction in a garden pond as they can be fished for with garden worms. I have a fly rod (which bends nicely at the top), with which I fish for Tench in my pond. A float is used on the line but no hook. A tough worm is tied on the line and dropped in the pond. A strong bite is soon seen but one must not strike. A gentle tightening of the line will cause the Tench to fight with fury, shaking the rod and pulling the line all round the pond. However, their heads can never be brought above the surface, either the worm is taken or they let go. This fight never appears to frighten the fish or put them off, for as soon as the bait is dropped in again the fish will be at it in seconds, and they do not seem to tire of this sport.

The male Tench can be recognised by the thickening of the front rays of the pelvic fins. I have found that the female Tench can become larger than the male of the same age, but this is from my own experience and may not have any true bearing on what happens in nature, but those I have had experience with have certainly given me cause for this assumption. When the fishes spawn they become very vigorous and the males chase the female fish with ferocity. I have heard my own fish splashing about in the shallows of my pond, making as much noise as if a dog was in the water. The chase and spawning is similar to that of goldfish. The males chase the females and force them into thick water plants near the surface if any are present. The eggs are about the size of goldfish eggs, laid in numbers but singly. They adhere to the plants and hatch in about the same time as goldfish eggs—that is, four days at 70°F., but longer if the temperature is lower. When first hatched the fry are very tiny but differ slightly from goldfish fry as they appear longer and just a very thin black line with two tiny eyes.

The feeding and rearing of the fry can follow the usual pattern as for goldfish and if given plenty of food and space they soon grow. These youngsters are very attractive as they have a bluish sheen on their bodies and a triangular black patch on the caudal peduncle. A small shoal of young Tench look very attractive in a set-up tank and I well remember when a judge could not name for me these "tropicals," as he thought they were.

A very attractive variety of the Tench is the golden one, and as a pond fish this is most attractive. Apart from the golden colour this fish is similar in habits to the ordinary green Tench.

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## Product Reviews

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TETRAMIN TUBE FOOD 66, is made in West Germany, by TetraKraftWerke, and distributed by Herb Royal Ltd. (Tetra Division), Colley Lane Estate, Bridgwater, Somerset. It cost me 5s. 0d.

I have never seen this food advertised, but I came across it in a dealer's shop. It's a long time since I last saw fish food, in a tube, for sale; I must have been about twelve years old at the time. "TetraMin Tube Food 66" is described on the tube as being "Frost-fresh aquatic food preserve—special diet for tropical fish," and the container holds 1 oz. of food. It is intended as a complementary food to the TetraMin flake food range. It is a complete diet in itself and is recommended for such fish as breeding stock, fussy imported fish, and marine fish. It does not cloud the water.

To use the product one removes the cap from the tube and squeezes out a length of food—rather like using toothpaste. The food is emitted from a small nozzle at the end of the tube, and looks like a thin worm; it's about as thick as the lead of a pencil. The length of the worm-like squeeze of food can be varied for the size of the fish—a long squeeze for larger fish, and a short squeeze for smaller fish. The food sinks quickly in the water, and fish need to be quite fast to catch it before it reaches the bottom. I found that larger fish seemed to be keener on this food than the smaller ones, the latter not having large enough mouths to catch the food before it reached the bottom of the aquarium. Bottom-feeding fish were keen to clear up any which did get to the aquarium base. I was rather disappointed on reading the analysis of the food on the tube: Crude protein 15%, crude fat 3%, crude fibre 1%. The protein content, essential for growth in fish, is rather low when one considers that other fish foods usually have a protein content of round about 30% to 60%—some foods for baby fish having a protein content of 75%. However, for a fish food novelty, and for a food which will provide a variety from live or flake foods, this one is worth trying. Not having kept tropical marines, I have not been able to test the food with these fish.

B.W.

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"ELECTIDY" aquarium electrical control unit, price 22s. 6d., is produced by Aqua-Service (Hayes), 237 Shakespeare Avenue, Hayes, Middlesex.

It's always interesting, and encouraging, to see new British products for the aquarist. This item is something new in a field which was ignored by

manufacturers until recently, and it fills a need which, I feel, has been too long-standing. Nearly every aquarist has seen an attractive tank spoiled by a tangled mass of distracting wires. The "Electidy" should be the answer.

The unit consists of a small, neat, white plastic box, fitted with a length of white, three-core flex. On the face of the unit are two press-button switches. These control the aquarium light, and the air pump. The pump, lights, heater and thermostat are wired into the unit, through two holes in the end. When the flex from the unit is connected to the mains, the heater and thermostat come into operation automatically, and remain in operation while the mains switch is on. The lights and pump are operated by the two press-button switches. The unit is supplied with full instructions as to how to connect the wires into the appropriate sockets. These are fitted with screws and the connection of wires is simply done by tightening up the screws with a screwdriver. Each socket is labelled for simplicity.

The instructions suggest that the unit may be stuck on the back or side of the aquarium by using some adhesive on the foam plastic back of the unit. I decided to try the unit on the glass base of the aquarium and I stuck it in place with some aquarium sealant—a silicone rubber preparation—which happened to be at hand. It stuck firmly in place, and was completely concealed. To operate the aquarium lights or pump one has only to slip one's hand under the aquarium, and press either button.

This neat little unit should be the answer to unsightly wires round the tank, and should solve the problem of where to fit switches, connectors, etc. For the owner of one or two tanks, the purchase of one or two of these units would be a good investment for the aquarist who has the tanks on display in the home.

B.W.

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THE LEAFLET on the construction of all-glass tanks referred to in the Trophix Aquarium Sealant product review (November issue of *The Aquarist*) is only available to Trophix users. A coupon for the leaflet is supplied with every tube of the sealant.

Any queries on Trophix or the construction of all glass tanks will be gladly answered by the company if a stamped addressed envelope is supplied.

All correspondence should be addressed to Trophy Products, Laurence Drive, Stover Trading Estate, Yat, Bristol.



"DAP" POWER FILTER, produced by Dap Developments, 52 Calbourne Avenue, Elm Park, Essex, price £9 5s. 0d.

This new, all-British made power filter is suitable for both tropical and marine tanks. It is about 14 in. high, and 5 in. in diameter, being cylindrical. The body of the filter holds 4½ pints, and the filter has an output of about 50 gallons.

This filter was developed by two brothers, Mr. D. Pitt and Mr. A. T. Pitt, both engineers and aquarists. They thought that power filters were too expensive and decided to make their own. This they did; and they thought that they could market them cheaply; that was before they found that purchase tax is 36½%. They managed to keep the price of the "Dap" power filter under £10—reasonable, considering that the filters are individually made to high engineering standards. The filter is made of I.C.I. Perspex, is very durable, and, being transparent, one can easily see when the filter media need replacing. The neat unit has a black Perspex bottom, top and motor cover, the screws and studs being of brass. It is operated by a one-inch stack shaded pole motor, working on 240 volts, A.C.

B.W.

Trophy Products, formerly of Orchard Cottage Huckford Lane, Kendleshire, Bristol BS17 1AP, have moved into more extensive premises at Laurence Drive, Stover Trading Estate, Yate, near Bristol.

SPRATT'S PATENT LTD., have now put on the market a flaked fish food which appears to be a very excellent product. It is composed of practically all the necessary ingredients for keeping fishes healthy. It is as nourishing as any live food and has a good protein content, 45 per cent. As it contains fish meal, shrimp, roe, liver, insects, vegetable matter and wheat germ its food value can be easily assessed. In addition some fish oil is also included.

This flake food is packeted primarily for tropical fishes but it is also excellent for coldwater aquarium fishes. The food floats well and is generally taken by fishes before it reaches the bottom of the tank. Tropical fishes take the food with alacrity and when I offered some to young fantails in a coldwater tank, it was eaten so quickly that none was left after a minute, none falling to the bottom. The food is capable of being reduced to a powder form with shredders or between the thumb and fingers; in which condition it is ideal for feeding to fry of about a fortnight old.

The food is packed in attractive containers and sells at a recommended retail price of 2s. 7d. for a small container, 4s. 6d. for the medium size and 9s. 6d. for the larger size. This contains 2 oz. of food and as it is dehydrated a very little goes a long way. Having tested this food I find that it is eaten avidly and does not cloud the water in any way. A feeding ring is recommended so that the food is prevented from spreading all over the surface of the water. This keeps the feeding fish among the food the whole time.

Although this food would be rather expensive for feeding to pond fish it may be interesting to know that just after ice had gone from my pond I offered some of this food to my breeding fantails and they took it well, although the water temperature was below 40°F.

A. BOARDER

"AQUALON," A BLEND of resins for the control of minerals and dissolved salts in aquarium water, marketed by the Silver Angel Water Treatment Company, Suite A, 24 Cranbourn Street, London, W.C.2, price 17s. 6d. for a 100 grams pack.

Supplied with full instructions, this product is a blend of resins which are, essentially, solid solutions of electrolytes. Unlike most other resins, for use in aquarium filters, this blend does not replace removed ions with other metallic ions, such as sodium. It removes ions such as calcium, magnesium, sodium, iron, copper, lead, zinc, etc., and replaces them with hydrogen ions. It also reacts with anions such as carbonate, sulphate, nitrate and chloride, and replaces them with hydroxyl ions. The hydrogen and hydroxyl ions combine to produce a molecule of pure water—H<sub>2</sub>O. The end result, in effect, is that the aquarium water is softened, soft water being appreciated by most fish and plants.

The resin is placed in the filter, preferably between two layers of nylon wool. Filtered water passes through it and is "purified." The resin is blue-green in colour, and changes to yellow-brown when it is exhausted. It should then be thrown away, as it cannot easily be recharged. The percentage reduction in the water's ionic concentration will depend upon the volume of water in the aquarium, and on its total dissolved mineral salts content. A rough idea of its strength can be had from the figures for a 10 gallon tank of water of 50 parts per million of CaCO<sub>3</sub> equivalent, using 100 grams of "Aqualon"—there is a 100% reduction in the ionic concentration of the water. In a 20 gallon tank, of 150 p.p.m. of CaCO<sub>3</sub> equivalent, there is a 35% reduction.

This product would be useful to soften aquarium water, especially in smaller tanks, or for fishes or plants which require special soft water conditions.

B.W.

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## OUR READERS WRITE

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### A Point of View

Many aquarists who show fish regard your "Champion of Champions" fish contest at the B.A.F. as the top class of the year and the winner is regarded by fellow aquarists as a true champion.

Yet in the December issue of your magazine there was ONLY ONE paragraph on the contest and NO picture of either the fish or the owner receiving his award.

I consider this very poor reporting and am not alone in my views.

Surely a fish called "A Champion of Champions" deserves a picture on the front page and a fuller report?

D. B. EASINGWOOD,  
85 Yewdale Crescent,  
Coventry, CV2 2FF.

### Advice Wanted

We seek assistance and advice and would be grateful if you could help this Club in our quest, if not directly, then by passing this letter on to another source of information.

The history of our Club only covers three short years, so as you will guess we still have a long way to go to really get established. Although the Club is young, we have a number of members old in the knowledge of fish keeping but not so very conversant in the finer points that go to making an Aquarists' Club run smoothly.

The important matter that leaves us groping in the dark at present is the matter of judging and points awarding at our Exhibitions. Oh yes, we get by at the moment, but it is really a hit and miss affair, hence this letter to you. Is there any yardstick by which one can be guided? After having read the article on the "Champion of Champions" Contest in the September issue of the Aquarist, I seem to feel hopeful that there is. You chaps over there are surely organised to better standards than we are here and we want to learn.

Any information that you can give us will be very welcome and I look forward with interest to your reply.

THE NATAL TROPICAL FISH CLUB,  
Durban, South Africa.

### Re *Kribensis*, August Issue

I was more than interested to read Bob Gardner's report of breeding and rearing of *Kribensis* (August issue) as, since being an inmate of this Prison, I've been fortunate enough to have had some experience with the breeding and rearing of *Kribensis* along with a few other different kinds of fish.

Let me first explain something of what might be an unusual address. Here, in brief, we are fortunate in having a tropical fish club in a heated room, of about 40 ft. square. It is specially wired to accommodate any lighting that the members may need. There are over a dozen members and as many enthusiasts. Members have anything from one up to seven tanks and each member has his own particular kind of fish or fishes to spawn. A great amount of assistance is given by the members of the Wakefield Aquarist Society of which we, as a club, are members.

My job is to care for the display tanks of the Prison, the well-being of the Prison fish and breeding of any fish I might think would be of interest to us all here. *Kribensis* is one of them. I too, like Bob Gardner, think that *Kribensis* is as colourful as any of the cichlid family—more so when in their courting colours. They are reputed to be shy; this is indeed so, but I find when they are settled and have gained confidence in their keeper, they forget this shyness and will feed willingly from their keeper's fingers, or tweezers, which I use to feed my fish with regularly. I mention "settled and gained confidence" because when a strange fish is introduced I find it very shy in comparison with the ones that have got used to me and the routine; only time and patience will bring them around to trusting their keeper.

In the breeding of *Kribensis* I find it isn't necessary to have a large amount of rock or thick plant clumps as suggested by a number of aquarists. This, in my experience, is unnecessary, also the covering of the front of the tank with paper, as I did do in the beginning. I now find that the more they can see me, and the more I can see them, the sooner we can get to know each other. This over-planting and too many rocks is why Bob Gardner has not had the opportunity to witness the digging and cleaning of the spawning site, which is done mostly by the female. If a tank for the spawning of *Kribensis* is set up in such a way



that the only suitable place to lay the eggs is under a plant pot or slate, the whole of the operation can be witnessed.

I would like to mention here that the pot is sawn in half and the bottom knocked out; it is placed with the bottom about an inch away from the front glass of the tank and the slate is then placed against the far end of the pot at an angle of about 45°, this gives them a darkened cave with the choice of spawning on the underside of the pot or the underside of the slate. I find that the slate is chosen and only rarely do I find that a pair have spawned on the underside of a pot. When a tank is set up in this manner, it is easy to watch through the bottom of the pot, and in the event of a spawning on the slate the eggs can be inspected and counted with the aid of a magnifying glass. This is unless you have a male like one of my pairs. Every time I peer through the observation hole, he retaliates by coming to the hole and peering at me, blocking my view. I have to go away and return when he least expects me!

In the event of removing the slate or pot as I always do now, the eggs can easily be seen through the side of the hatching tank before methylene blue has been added. Bob would also find that there is a great difference in the size of brood to the amount of spawn. In my experience of breeding *Kribensis*, I find if the spawn is left to the care of the parent fish, a large percentage is either eaten or knocked off the slate or pot. Those that fall on the floor will not hatch and it is my opinion that this accounts for Bob's brood of only 40 to 50.

I find by removing the spawn and hatching it out artificially as I do with *Kribensis* along with many other kinds, I lose on average 4%, and this because they are not fertile, but out of an average of 145 eggs to a spawn, one cannot class the males as being inefficient. I write "males", because I have three pairs of breeders at present, I might add that if not disturbed the *Kribensis* that I have, and have had, will spawn regularly every 17 to 20 days, to rest them periodically as I do I simply remove the pot and the slate; if they want to hide as they do when a stranger approaches their tank, they disappear behind any of the rocks that are set in their tank for this purpose, but two or three are quite sufficient. All the *Kribensis*

that I have had have never attempted to spawn on an open face of rock or slate, so there is no fear of them spawning, instead of taking the rest that is intended.

There is a point that Bob mentioned where he writes that he would rather have small broods and get quality fish, I take it from this that the breeders he talks of are of the same brood "brothers and sisters," this, in fact, is not the way to produce quality fish, nor is the fact that the brood of 40-50, because it is small, makes quality fish, as I have pointed out, his spawning was, most probably, as large as mine or anyone else's and the 40 or 50 he writes about are of the same quality as the other 100 that he lost, would have been, so it would not have made any difference whether the brood was 40 or 140, the quality would have been just the same dependent entirely on the quality and condition of the parents, as it is a well-known fact that inbreeding can only retard quality.

As Bob states, the sight of parents shepherding their young is a sight worth seeing, but it is my opinion that for sheer obedience and excellence in parental care, one needs to watch the beautiful little orange chromide. These fiery little fish are the only ones which when I put my hand in their tank to remove the spawn, attack my hand fiercely, after replacing their rock or slate with a similar one immediately and two or three days of extra helpings of the choicest of foods all is forgiven I'm pleased to say, but the hatching of the chromide spawn is a different proposition altogether to the hatching of *Kribensis*.

As Bob states the *Kribensis* are easy, almost everything is when one knows how, but it is not always easy to begin with, not without the loss of a big percentage of the spawn. With Chromides it has been the same, many failures and much frustration. I'm pleased to say that "I've cracked it now," the method I use is a much stronger mixture of methylene blue and one of a continual stream of the mixture filtered before allowing it to flow over the eggs, which are set up in a jar inside the hatching tank, by this method I lose less than 7% of the spawn as against 70% when left to the parents.

ERIC JONES,  
H.M. Prison,  
Wakefield.

# Why not join a society?

The following details will be of interest to readers wishing to become a member of a society. The benefits of active membership in terms of information, experience and helpful associations cannot be over-emphasised.

In future issues lists will be published of societies affiliated to the Federation of Northern Aquarium Societies, The Midland Association of Aquarists' Societies and The Federation of Scottish Aquarium Societies.

Readers wishing to contact any of the societies listed below should address their letters to the society, c/o **R. A. DOVE, 5 FARM CLOSE, CROWTHORNE, BERKS.**

A stamped addressed envelope **must** be enclosed.

## FEDERATION OF BRITISH AQUATIC SOCIETIES: AFFILIATED SOCIETIES

### BEDFORDSHIRE

Bedford  
Dunstable  
Vauxhall Motors

### BERKSHIRE

Bracknell  
Didcot  
Reading

### BUCKINGHAMSHIRE

Amersham  
Bletchley  
High Wycombe  
South Bucks.

### CAMBRIDGESHIRE

Cambridge

### ESSEX

Billerica  
Blackwater  
Chingford  
Clacton  
Harlow  
Ilford  
Leyton  
Romford  
Southend  
Thurrock  
Walthamstow  
Witham

### HAMPSHIRE

Basingstoke  
Bournemouth  
Gosport  
I.O.W.  
New Forest  
Portsmouth  
Southampton  
Winchester

### HERTFORDSHIRE

Boreham Wood  
Hemel Hempstead  
Mid Herts.  
Stevenage

Verulam

### KENT

Canterbury  
Deal  
Erith  
Medway  
North Kent  
Sittingbourne  
Tonbridge

### LEICESTERSHIRE

Leicester FK

### LONDON AREA

Bethnal Green  
Brent  
Cattford  
Clapham  
Ealing  
Dulwich  
East London  
Enfield  
Freelance  
Hampstead  
Harrow  
Hendon  
Hounslow  
Independent  
Lavengro  
L.T.E.  
Riverside  
Runnymede  
Sydenham  
Tottenham  
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### NORTHAMPTONSHIRE

Northampton

### OXFORDSHIRE

Oxford

### SUFFOLK

Bury St. Edmunds  
Suffolk

### SURREY

Croydon

Guildford

Kingston  
Reigate & Redhill  
Roehampton  
South Park  
Surrey Circle  
Weybridge  
Woking

### SUSSEX

Brighton  
Crawley  
Hastings  
Littlehampton  
Mid Sussex

### WALES

Barry  
Bridgend  
Cardiff  
Cwmbran  
Harlech  
Llanelli  
Llantwit Major  
Newport  
Penarth  
Rhondda

### WEST COUNTRY

Amesbury  
Chippenham  
Poole  
Salisbury  
Taunton  
Torbay  
Trowbridge  
Weymouth  
Yeovil

### MISCELLANEOUS

Ormskirk  
Tamworth  
Irish Federation

### SPECIALIST SOCIETIES

Edmonton F.G.A.  
Radlett F.G.A.  
F.G.B.S.

All general enquiries re the Federation apply: General Secretary: Mr. K. Pye, 35 Steeles Road, Hampstead. Applications for Ties and Badges: Assistant General Secretary: Mr. R. Esson, 22 Flamstead Avenue, Wembley. Applications for Publications: Publications Secretary: Mr. S. Mooney, 44 Coniston Road, London, N.10.

# WHAT IS YOUR OPINION?

By B. Whiteside



OUR FIRST LETTER this month comes from Mrs. K. Farndale, of Hull Road, York. She suggests that lime deposits which collect round the aquarium glass at the water surface can be removed by rubbing with a piece of crumpled aluminium foil. This method will not harm the fish.

Mr. R. H. Birchall is 17 years old, and writes from Corinthians, Rydal School, Colwyn Bay, on the subject of items which he would like to see in a new book about the aquatic hobby. Being scientifically minded, he would like to see more tabular fish-keeping books. He says that by this method it would be much easier to compare both plant and fish species. In the plant sections, he would like to see indicated the number of watts required per square foot, and a number given to indicate which plants can be safely grown together—e.g., all the number 2's. He would also like to see included columns marked "Sub-gravel Filtration" and "Moving Water", with "Yes" or "No" marked for each species. Mr. Birchall thinks that the hobby could do with a more tabular breeding manual, like some of the society bulletins which he has seen. On the question of a leaking tank which one wants to seal without emptying it, he has had experience of a bottom-glass cracking in an aquarium. For three weeks he tried several commercial sealants while still losing water at a rate of about 1½ gallons per day. In desperation he took a shovelful of earth from the garden and, after disturbing the gravel slightly, he put it in the tank. It sealed the leak after about four days and the tank has not leaked in the subsequent five years. On the question of why one enters fish in competitive shows, Mr. Birchall thinks that this is the best way to recruit new members to the hobby, and that it is the only means by which one can judge how one stands in skill compared with one's fellows; standards are, after all, only comparative. A further item which Mr. Birchall would like to see included in a new book would be a section on fishhouse economy, as suggested by Mr. G. R. Pryke in a previous issue.

Brenda Johnston resides at Wirral, Cheshire. (Not knowing whether Brenda is Miss or Mrs., I hope she

won't mind if I use her Christian name.) On the subject of the use of prescribed drugs for the treating of fish diseases, Brenda thinks that there is far too much "messaging about" by amateurs, most of whom spend money on trying to cure fish when it would be much better spent on buying new, healthy stock. She is not referring to methylene blue, malachite green, or quinine—the old familiar remedies, but to the sulphas, terramycin, aureomycin and such like. She says that these should be left to the Americans as they love to have a jam-packed first-aid kit. "See any of the U.S. aquarium magazines for proof", she says. In a new book she would like to see the basics—light, heat, plants and fish, leaving out the "once in a blue moon" fish which are rarely seen. Brenda would like to see more details on plants, and perhaps tables on breeding—from simple to impossible.

On the best treatment for an aquarium frame, before it is glazed, Brenda thinks that it should be cleaned with a wire brush—either by hand, or operated by a drill—to remove every trace of rust. It should then be gone over with fine emery paper and then brushed free from dust. Two or three coats of "Jenolite" or "Plus Gas" rust inhibitor should be applied, followed by two or three applications of undercoat. One or two top coats should then be added. The frame should next be glazed and given one final outer top coat. Treatment for a leaking tank, which Brenda only once had, consisted of the use of newspaper until the water dried up. The leak was then treated with soft bar soap. This sealed it but she also stirred up the gravel in the immediate vicinity, and she thinks that some of the fine mulm was forced into the leak too. For a small tank, which is to contain only one species of fish, Brenda suggests 20-24 *Pristella riddlei*, with well grown *Vallisneria* or *Sagittaria*, neither of which plants she can grow. For a larger decorative tank she would use five good goldfish, *Elodea*, Hornwort and *Vallisneria*. Why keep plants in an aquarium? Brenda has plants mainly for decoration but they help to keep the tank clean by utilising most of the mulm, and they keep the algae down. Brenda does not know the reason for competitive shows other than "Your fish is better than mine", or vice versa. She has only ever entered guppies, and her only

reason—honestly—was to beat her pals' efforts in breeding. She thinks that showing is disappointing to some of the newer members of the hobby, and feels that anything that's "off-putting" should be avoided. She thinks that's why we lose so many beginners when they experience white spot, green water, over-feeding, etc. "We all learn by mistakes", she says, "but some give up very easily."

Rainham, Essex, is the home town of Mr. F. Wootton who coats the inside frame for a new aquarium with an aquarium sealer. When dry it is ready for glazing. The sealer, being non-toxic, is also a good rust preventive. Mr. Wootton always stops a leak in an aquarium by pressing the glazing compound with a piece of metal, at the position of the leak. He uses a wallpaper stripping knife and this treatment forces the compound to block the leak. In more severe cases a little compound added to the leaking area usually effects a cure. For an aquarium which is to contain only one species of fish, Mr. Wootton would choose angel fish as he finds these most interesting and fascinating, especially large ones. In his own large tank he keeps several large species of cichlids, and their graceful movements are most relaxing to watch. These large fish give the minimum of trouble, half an hour a week only being required to keep his tank crystal clear.

Mr. Stanley Fox, a regular writer, lives at Longbenton, Newcastle upon Tyne, and he writes about split fins in guppies. For about four years he tried breeding only from fish which did not show split fins. Initially there was a dramatic decrease in split fins but, with the passage of time, the ratio of split fins increased. Looking back over his notes he finds that the average figures at the end of the experiment were 30% split fins, with 70% unaffected. He thinks that this method showed some improvement, but is not the real answer to the problem of split fins. For a previous writer, Mr. Hughes, Mr. Fox suggests the plant *Echinodorus tunicatus*, which he considers to be the best sword plant of the genus. It is fairly slow growing and will not outgrow the aquarium. When growing well the plant will give a magnificent display of long lasting foliage. Most of the leaves are carried horizontally and are bright green, with broad, spear shaped leaves carried on long stems. The plant reaches a height of about 12 in. Mr. Fox's specimens flourish in water with a p.H. 7.2, some being planted in gravel without sub-soil, others being potted with a sub-soil of humus topped with gravel. All plants show more or less equal growth. Lighting is from two 25 watt lamps which are on for about 14 hours per day. The plant does well in a fairly well planted tank. Mr. Fox finds this plant to be immune to damage from snails and he suggests that the reason

may be that the plant exudes a substance which deters snails. Mr. Fox asks if anyone knows if this is true.

Mrs. Daphne Hutchinson, of Cullercoats, North Shields, offers some comments to Mr. Jeavons, a previous letter writer who asked about hairgrass. She suggests that hairgrass is, without doubt, one of the fiddliest and most infuriating of aquarium plants—but it looks nice and is a novelty because few aquarists keep it. She has an attractive clump of it in her show tank and it is growing up well and spreading, only because a net is rarely introduced. In her other tanks, whenever she tries to net a fish, up comes a clump of hairgrass, the fine leaves sticking in the mesh of the net and not sliding out again. In her husband's show tank the plant is always found floating on the surface because burrowing catfish uproot it. Mrs. Hutchinson thinks that the plant would do well somewhere where it would be given a chance to grow without being disturbed as its means of anchorage are so slight. Her own tanks are all-plastic types, with 30 watt strip lighting, kept on for 7-8 hours daily. She concludes that the plant does not need strong lighting to do well. For Mr. Keith Child, who asked about hatchet fish, Mrs Hutchinson says that it is essential that they be kept in company with other small characins. Her husband bought two marble hatchet fish and they were put in with four angels, and some other medium sized fish. They hung in the centre top of the tank for many weeks, hardly feeding and rarely moving. They were bumped into by other fish, and occasionally nipped to see if they were living creatures. They got ich., then ragged fins, then fungus, until their owners thought that they would be better dead. The hatchets were transferred to Mrs. Hutchinson's tank to see if the fast-moving guppies, characins and danios would liven them up. They got ich. again. When they recovered, they livened up as much as the others, and now compete for food, even taking live worms from the feeder. They have remained healthy and their owner is convinced that previously they were oppressed, perhaps even petrified with fright, by the size of the fishes with which they shared the tank. For a new aquarium book, Mrs. Hutchinson would like to see included all the little odds and ends of information which aquarists have to learn the hard way e.g., that little fish are frightened of big fish no matter how peaceful they are; they often do not get a fair share of the food; that fishes of a certain colour fight with other kinds of the same colour—she had a red swordtail male which killed a pair of red platies, and asks if they will all do this or if it was a rogue fish. From the book she would want to exclude all the dogmatic rules which are nothing but the author's own opinions. Mrs. Hutchinson seethes when she reads instructions about not having too many tanks in the house or it would look like a public aquarium; or other instructions

about not trying to grow too many types of plants. She asks how one can know which plants grow best if one has not attempted to grow a wide variety.

Mrs. Hutchinson thinks that the main purposes of having plants in an aquarium are to make it look nice, with differing heights, sizes, shapes of leaves and varying colours, to act as a foil to the colours of the fishes; to give extra interest to the hobby—she is keen on growing various types of plants as she is of fish; and they offer shade and hideouts for fish. As regards shows, she thinks that they attract newcomers and educate beginners. She visits shows to see what constitutes a perfect specimen, to recognise species, and to see fishes she doesn't want to keep—or has no chance of keeping. Show organisers would help a lot if only they would rule that every exhibit should be labelled with its full name; she gets frustrated by seeing hugh cichlids, gouramis, barbs and loaches, and not knowing which species they are. Mrs. Hutchinson jokingly offered a piranha fish for a birthday present, and asks if anyone can tell her just what the attraction of this fish is to anyone who owns any.

Being in the motor trade, Mr. J. W. Buffham, of Spalding, Lincs., has access to paints, spray guns, etc., and this makes the job of preparing an aquarium frame for glazing, easier. Mr. Buffham had a 48 in. × 15 in. × 12 in. frame, and the first thing which he did was to take the frame to the local radiator works and put it into their caustic soda tank, which soon removed the old paint and putty. The frame was then lightly sanded and then sprayed with red oxide—used for rust protection on cars. It was given several coats. The frame was next given several spray coats of ordinary grey primer finish, and left for several days to harden off; it was then sprayed with ordinary household "Dulux" paint (as you know, one can put paint on cellulose, but not cellulose on paint). The frame probably had a total of fifteen to twenty different coats altogether. It was then glazed in the normal way and has been in use for two years now, showing no sign of rust. The ends and back were painted but, of course, the putty can still be seen. Had the glass been painted before the frame was glazed, the tank would have looked much better.

Mr. P. K. Brown, of York House, Wrekin College, Wellington, would like to see, in a new book on fish-keeping, more attention paid to the biological side of the fish e.g., how the fish works, and how factors like a sudden change of water affect the fish. He would like to see a fuller coverage of subjects such as filtration, feeding, genetics, etc., and less attention paid to a catalogue of all fish available. For the required information, at present, one has to search through a number of books, and then it sometimes cannot be found. Mr. Brown has glazed most of his own tanks,

and has glazed some for his local aquarium shop. Most of the new tanks which he glazes are rust proof—galvanised. This is very long lasting, and provided the frame is well painted, the fish will come to no harm. Mr. Brown thinks that such a tank is well worth a couple of shillings extra, as the tank lasts for so much longer. Such tanks should be painted with a couple of coats of normal paint, and they need no other preparation such as gold size, etc. For a normal angle iron frame, Mr. Brown uses a rust proof primer such as "Krust". This preparation can be applied all over the frame and it dries in a couple of minutes, so several coats can be applied in a short time. When dry it is given several coats of "Joy" plastic enamel. Mr. Brown thinks that this lasts longer than any other paint, and it forms a better seal around the tank. For a small leak in an aquarium, he leaves it, hoping that it will seal itself in a couple of days, and if this does not happen he moves the gravel away from the area of the leak and adds some fine sand. This normally blocks up the leak. Mr. Brown suggests, from experience, that all tanks should be sealed before filling with water. One of the new silicone aquarium sealers is ideal. A 17s. 6d. tube will do several tanks. It may seem expensive at the beginning, but it pays well in the long run.

Mr. Brown considers that the stocking of a tank with one species of fish is difficult. He thinks that one should choose fish which are active and colourful. For a small tank he suggests angels, or neons, or checker or tiger barbs, or some small tetras. He finds a larger tank more difficult. A dealer in Manchester has a 3 ft. tank containing cardinals, and at first it seems attractive, but Mr. Brown can't help feeling that there is something missing! He thinks that the main purpose for plants is decorative. Many attractive plants, not normally found in the average aquarium shop, can be obtained with a little trouble. Plants can make or break a tank, and the individual aquarist can express himself by his use of plants. Plants are also useful in breeding, but synthetic alternatives are now becoming more popular.

Mr. R. C. Taylor lives at Rainhill, Liverpool, and asks for readers' opinions on the best way to eliminate snails from a well-established tank without taking out fish or plants. He has found chemical controls to be ineffective in doses which do not injure the fish or plants. He removes the larger snails, and rubs his hands over all the inside of the tank to remove snails' eggs, which the fish will eat if they are hungry. All plants should be examined, as far as possible, as should be the gravel, particularly under the heater and in corners. Care should be taken to disconnect heaters, etc., and the aquarium lights should be kept well clear of the water. The best time to see snails is after a period of darkness. Mr. Taylor feels that to crush a large snail in the tank may release eggs,

which will hatch later, into the water, but he says that he has no proof. Mr Taylor asks if anyone can give him the optimum conditions for the breeding of whiteworms. He would like advice on compost, temperature, p.H., moisture and food. (I did an item on whiteworms in the November "Aquarist". Perhaps this might be of use!) Finally Mr. Taylor asks if anyone knows where he could obtain coarse grained sand which would not harden aquarium water, within 100 miles of Merseyside. He says that fine, silica sand is extracted from a large pit one mile north of Jodrell Bank, and that he was able to buy a few hundredweights on the condition that he dug it from the heap himself.

Seventeen-year-old Mr. A. R. Coles, of Wavelstone, Kent, begins his letter: "Although red-tailed sharks are related to the barbs and rasboras, their behaviour is typical of the cichlids in that they spawn on a surface, and the males guard the eggs." He goes on to say that these sharks are sexed by the amount of white on the dorsal fin—the female having a greater area of white, and being plumper than the male. Red-tailed sharks are mainly vegetarians, and the amount of green food available in their diet no doubt contributes to their well-being and to one's success in their breeding—which is done commercially in Singapore and Hong-Kong. Mr. Coles has obtained excellent young guppies from veiltail adults available in shops, the cost being about 7s. 6d. to 10s. 0d. per pair. Many of his youngsters have, in fact, been better than their parents, and he suggests that potential breeders try obtaining their stock from their local fish shop, as the guppies on sale probably originate in either the Far East or Florida, and this is where new developments in guppies appear to come from today. Hatched fish are one of Mr. Coles' favourite fish and they fascinate him because of their shape and their adaptation to their environment. Mr. Coles says that hatchet fish are usually available in two kinds—silver hatchet fish and the marble hatchets. Hatchets are delicate fish, especially marble hatchets, and they are very prone to white spot, but once cured of this, and their nervous disposition, they are fairly hardy. Hatchets take all foods but prefer insect foods when these are available; freeze dried foods admirably fill the gap. Hatchets can be trained to take food from one's hand, with patience. Marble hatchets are less active than the silver kind, but a well-fitting cover is essential as the fish can fly. Hatchets do not like strong aeration, they are peaceful, and they are definitely a conversation piece. He wishes thirteen-year-old Keith Child, who asked the question about hatchet fish, the best of luck with his fish and hopes that he may eventually breed them. Mr. Coles found the comments on tissue thickness, in the fins of male

guppies, made by Mr. Fox in the November issue, very interesting and he says that he has noticed the same thing with long-tailed goldfish, especially after such fish have been travelling.

Hitchin, Herts., is the home of Mr. John Stapleton, who works in a tropical fish shop after college and at weekends. In his part-time job he hears the opinions of many other aquarists. Mr. Stapleton thinks that there is a lot to be said for the small aquarium which, when suitably decorated and stocked, can be more aesthetic than larger ones. He thinks that many others share his opinion that a shoal of neons, or better still, cardinals, is a beautiful sight. He has found that many people, who know nothing about fish, and have merely come into the shop to look around, seem to single out, from many tanks replete with fish, the neon tank. "A very darkly dressed tank, with bright lighting, and planted with *Cryptocoryne nevillei* (despite the fact that the plants do not come from the same continent as the fish), seems to display these fish at their best," says John. He thinks that there is a lot to be said for a shoal of *Nannostomus marginata* which, when in peak condition, is an absolutely beautiful fish. (Agreed!) He would never care much for glowlights but would, instead, choose the larger, and more expensive, glowline rasbora (*Rasbora pauciperforata*) which, in his opinion, is far underrated and neglected. Mr. Stapleton thinks that no fish look good unless placed in a suitably decorated tank, and that the trouble with larger tanks is that they are rather difficult to decorate. To simulate a small area of their natural habitat is more difficult as he finds one huge rock or ornament is much more aesthetic in proportion to the tank than lots of smaller pieces. This is both expensive and impractical weight-wise.

A large aquarium, decorated with the emphasis on the vertical, looks beautiful when stocked with a shoal of angels—either the ordinary silver, lace or black angels. These look best to Mr. Stapleton, as they are more majestic and tidy-looking than the ragged veil forms which he would not touch with a barge pole! He also thinks that a shoal of gouramies, *Trichogaster leeri*, looks most beautiful. Mr. Stapleton considers that plants are, perhaps, more important to him than fish. It is a challenge to grow the plants, and one soon becomes desirous of growing something more than just Vallis., etc., and moves on to more expensive and rare varieties. Upon seeing an aquarium he always notices the plants before the fish and he thinks that everyone, subconsciously, does the same, as the plants "make" the scene, aesthetically and artistically. It always makes him mad when he serves people in the shop, and they are not interested in learning more about the plants, only about the fish.



Worse still, to him, is passing over real plants in preference to plastic ones. People, in general, seem to be very ignorant about plants and their functions. Once someone came into the shop in which he works and asked for a weed or two. Upon being asked if the buyer had any particular species of plant in mind, the buyer replied that he already had a plant, and wanted a weed to go with it. Others keep asking if plant is a "good oxygenator," and, hence, they receive a long talk about how plants "breathe out" oxygen, when in light, and carbon dioxide during the hours of darkness.

On the question of the newer drugs being used for the treatment of fish diseases, Mr. Stapleton has had some experience of their use in his shop and he has come to the conclusion, through bitter experience, that one should stick to the older cures, as too little is known about new ones as regards their use by aquarists. He found that it is rather expensive to further this aspect in the shop as two fully grown large *discus* were lost through the use of aureomycin. In the shop experiments have also been carried out with terramycin sulphamezathine, proflavine and mercurochrome, without any "miracle" results. Most of these drugs are only available through vets. Mr. Stapleton is not condemning the use of these drugs as his results were probably due to inept knowledge of their use. He has found that good results can be obtained with established remedies so he now sticks to these. On the question of showing, Mr. Stapleton thinks that the aim is just "one-upmanship." He does not see why someone should not want to display a fish which he has developed, from a youngster, to the peak of condition, but he cannot help wondering about those who buy large fish just to show them. This is like jumping the queue! Mr. Stapleton asks if anyone knows of any exams on fishkeeping or fish which he could take, and how he would go about studying for them.

Mr. B. Morgan lives at Luton, Beds., and he writes on the subject of settlement of detritus on plants' leaves. He has found that the more plants one has in one's tank, the less the trouble which will be encountered. He has been keeping tropicals for eighteen months and has tried growing hairgrass (*Eleocharis*), several times (Mr. A. Jeavons' question in the Nov. issue), but has had little success due to the shallow rooting system. The plants have been too easily uprooted by bottom feeding fish. He thinks that hairgrass is a most attractive plant. The water in his area has a hardness of about 26°D.H., and a p.H. of 7.2. He softens his water to about 5°D.H., giving a p.H. of 6.9. He can successfully grow all *Cryptocoryne* species and *Aponogetons*. He has a 24 in. x 12 in. x 12 in. tank which has a 60 watt strip light fitted; the day length is about twelve hours; no prob-

lems with algae are encountered due to the dense planting, but Mr. Morgan cannot grow the bunch type of plant eg. *Cabomba*, *Anacharis*, etc. He would be interested to have readers' views on the most attractive *Cryptocoryne* species. His own plants are *C. affinis*.

His main reason for having plants in his aquarium is that he enjoys cultivating and propagating plants as much as he enjoys breeding fish. He thinks that an aquarium devoid of plants looks bare, but devoid of fish, if well planted, it can still be a thing of beauty. On the question of treating an angle iron frame he would first emery the frame absolutely clear of rust and then coat it with one of the "Araldite" coating resins. A small aquarium stocked with cardinals is his "ideal" aquarium. A large tank containing three spot gouramis is, he thinks, a thing of great beauty. For the clearing of duckweed from an aquarium water surface, Mr. Morgan would use some three spot gouramis. He finds that these make short work of it in a few days.

Mr. P. Hind, of Harold Hill, Essex, asks about the address of Mr. G. R. Pryke, who sent a letter to the November issue's W.I.Y.O. column. Mr. Hind would like to ask Mr. Pryke about running a fish house on a limited budget. Perhaps Mr. Pryke would write an article for "The Aquarist" on the subject, as a number of people have written to me to ask for his address to get information about fish houses. Meanwhile, his address is Mr. G. R. Pryke, 3 Hollinghurst Close, St. Leonards-on-Sea, Sussex.

Our last letter-writer lives in Africa—in Blantyre, Malawi, and it's most interesting to have opinions from so far away. The letter comes from Mrs. M. Renwick, who lives at Barclays Bank D.C.O., and she finds it difficult to find a place in her house where a tank will not get too much daylight, because of the tropical climate. Her problem is in keeping her tanks cool, and not in heating them. For the removal of algae from the glass of her aquaria, Mrs. Renwick uses a well known pot cleaner, "Scotch Pad." It will last almost indefinitely, and if one is careful not to trap any gravel between the pad and the glass, there is absolutely no danger of scratching the glass. She has been using the pad for more than two years, and her glass has not suffered at all. Mrs. Renwick also uses a toothbrush to keep her rocks free from algae. This is done once per week, as it is necessary this often; the freed algae is allowed to settle, and it is then siphoned off. It does make the aquarium water very murky for a few hours, but with a good under gravel filter the water is soon cleared, as the algae is sucked down on to the gravel, where it is easy to siphon off. This also gives the aquarium a partial change of water each week.

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# OUR EXPERTS' ANSWERS TO YOUR QUERIES

## COLDWATER QUERIES

By A. Boarder



*Please note:* Tropical and coldwater queries will not be answered by our experts unless a stamped addressed envelope is enclosed with your letter.

I have a "Gem" plastic-framed tank and am advised that I must not use a razor blade as a scraper for the glass. Why is this and what can I use?

I also have a "Gem" tank and find it an excellent type, never needing painting nor ever rusting. The reason why a razor blade should not be used is because the sealing agent is a special type which remains to a certain extent plastic and leakproof. A razor blade could strip some of the sealer from the joins and might then cause a leak. I found a simple method of cleaning the front glass. I borrowed a long plastic knitting needle and stuck on the point an india-rubber. I sliced a strip off this so that it had a good clean surface. This acts fine and can do no harm to the glass or sealer.

Please can you give me any information on coldwater catfish? I have been unable to find any books dealing with them.

The coldwater catfish sold today is the European catfish (*Silurus glanis*), and this fish is quite unsuitable to include in a tank or garden pond. It is sold as a scavenger and as such it is quite efficient, in fact too efficient as it can not only eat up any food left over but it can also eat the other occupants of the tank as well. This fish has a huge head and mouth and the body tapers away rapidly. With such an enormous mouth it is able to catch and eat any fish at least half as big as itself. When you realise that one was caught in this country not long ago which weighed over thirty pounds, you can see the folly of introducing one to a garden pond. This catfish is not native to this country but it has been introduced into some waters. About sixty years ago Lord Rothschild placed some catfish in the reservoirs near Tring and I heard that not long after one or two very large ones were found dead at the side. However, they must have bred as some small specimens were caught in the canal which the reservoir serves. It is possible that they could have spread over a great part of the country as a network

of canals spreads over large areas of England. I find that ordinary goldfish are just as good scavengers as any other fishes as long as they are not over-fed artificially. Leave a rather fouled-up tank with goldfish in for a fortnight without feeding them and they will bring the tank back to a clean healthy state.

I have a garden pond 18 x 8 feet, and wish to get a siphon pump which will take up the mulm and muck from the bottom. I can only get a small hand type which is useless. Can you tell me where I can get such a pump?

I am sorry but I have never heard of a siphon pump which would be capable of removing so much mulm from your pond. One would need one similar to those used for emptying sewage tanks. I can only suggest that you enquire of Highlands Water Gardens, Rickmansworth, Herts., to see if they have such a pump in stock.

I have brought a number of young goldfish and shubunkins inside for the winter. They are of this year's hatching (1969). One or two of the goldfish are very raw and red at the vent and one of the shubunkins keeps worrying this spot. Can I do anything about this?

The shubunkin should be removed but the fish with raw places should also have treatment in a separate tank. It is possible that they have some intestinal trouble and a few days in a tank with a tablespoon of sea salt to each gallon of water might improve the fish. Do not feed for three days and then offer small live food such as white worms or broken garden worms.

In a recent issue of "The Aquarist" the use of Jetcem was recommended for repairing ponds. I have tried all the shops in Derby and none has heard of it. The cement wholesalers have been contacted and they have never heard of it. Can you give any information as to where it can be obtained?

When I received your letter I wondered if I had made a mistake as to the name of the product. However, on a visit to my local shop of Norlands builders' merchants, I saw plenty of bags of Jetcem on the shelves. I was informed that it was obtained from:

British Sisalcraft Ltd., Homecraft Division, The Hill, Ilford, Essex. I hope this will help.

**Do I need to feed my goldfish in an indoor aquarium now that the weather has turned colder?**

If the room where the fish tank is kept is centrally heated or has a fire in it, then the fish may require some food each day. Regulate the feeding with dried food so that once a day a little is given. If it is of the flake type you should try to give, each time, just enough

for the fish to clear up within two or three minutes. If you give so much that hardly any at all reaches the bottom you will find that this is enough. If fish are fed too much or too often when the water is not very warm, it will prevent them from searching among the water plants for soft vegetation. This gives them some exercise and keeps them healthy. A constant supply of artificial food in the tank is a very wrong policy. A hungry fish is usually a healthy one, but of course young fishes must have sufficient food to give them the sustenance for growing.

## TROPICAL QUERIES

By Jack Hems

**How many different tropicals could I keep in a 18 in. by 12 in. by 12 in. tank without artificial aeration?**

Provided the tank is adequately lighted and planted, especially with plants that give out an abundance of oxygen such as *Elodea densa*, up to ten tropicals of a size of from 1½ to 2 in. would live without risk of asphyxiation, unless this was brought about by neglect.

**My female swordtail gave birth to some fry the other day. I noticed that a number of them could not rise off the bottom, but appeared to be held down by an invisible thread or weight. Please could you tell me what ailed them?**

Your fish had a defect of the swim-bladder. This might have been brought on by an abrupt change in the temperature of the water, the transfer of the female to another tank or breeding trap when she was in an advanced stage of pregnancy, the introduction of a sizeable quantity of water of a different quality, or an inherited weakness transmitted from the parent fish.

**Why is compost necessary in a breeding tank?**

Compost is not always necessary in a breeding tank, but a plain glass bottom, reflecting light and the images of the fish is enough to dampen the ardour of any pair on the threshold of mating.

**Please give me the scientific name, country of origin, and general care in the aquarium of the upside-down catfish.**

There are several species of catfish of the genus *Synodontis* that have the peculiar habit of swimming upside down. The species usually imported is the 2 in. or thereabouts *S. nigriventris* from tropical West Africa. This little fish needs nothing special in the way of food or temperature and usually does very well in a thickly planted tropical tank stocked with non-aggressive fishes.

**I should be grateful for any information you**

**can give me about the rare livebearing barb (*Barbus viviparus*).**

*Barbus viviparus* is an oviparous species and not a livebearer. It was given its scientific name in the mistaken belief that it produced living young. Later Dr. K. H. Barnard, of the Cape Town Museum, found that the supposed unborn barb fry found in the dissected specimen were really the undigested fry of a cichlid.

**Can you please settle an argument? Is there a tropical aquarium fish called a jumping anchovy?**

According to an American tropical fish book the jumping anchovy is a fish known to science as *Hemibrycon tridens*. It is native to Peru and is little known even in the U.S.A.

**I have had a plant of *Echinodorus cordifolius* growing in my aquarium since last April. For the first four or five months it flourished well, but lately there has been a marked falling off of growth, and all the leaves are browning with a creeping decay. The tank is near a window facing due west, and every night a warm white fluorescent lamp of adequate wattage (it must be because various cryptocorynes I have in the tank are doing well) is switched on to make good the loss of light-hours. Can you suggest a reason for this plant's deterioration?**

The natural light your *Echinodorus cordifolius* is receiving through the window at this time of the year is not strong enough to ensure proper growth. The cryptocorynes are flourishing because they do not require a bright light. If you light your fluorescent lamp earlier in the day, there should be renewed growth and an improvement in the appearance of your plant.

**I am in urgent need of some information about a fish called the January tetra. My dealer told me he has never heard of such a fish, but I have been given to understand by an aquarist I met in his shop that the January tetra is a well-known characin.**

The January tetra (*Hemigrammus hyanuary*) is far from being well known. In point of fact it is a little-known species from the uppermost reaches of the Amazon. It is of average tetra size and was described for science by an American ichthyologist some forty years ago.

**Please tell me the scientific name of the opaline gourami?**

The opaline gourami has no scientific name. It was developed from the old grey two-spot gourami (*Trichogaster trichopterus*) and the blue sub-species (*T. trichopterus numatranus*) many years ago by an American aquarist living, if I remember right, in Texas.

**Can the common American catfish be kept with tropicals in a community tank?**

Small catfish from North America can be accommodated for a time in a heated tank, but as they increase in size they tend to look upon any creatures smaller than themselves as food. Strictly speaking, these North American catfish are not well suited to a tropical tank but do best at ordinary room temperature.

**A friend has suggested that I keep a small red-ear terrapin in my community tank to eradicate snails and clear up uneaten fish food. Would the fish come to any harm if I took this advice?**

The red-ear terrapin seldom inflicts any damage on fish until it has reached a carapace length of about 2 to 2½ in. In its larger sizes, however, a terrapin will bite at passing fish. A baby terrapin will soon rid a tank of snails, and some specimens develop a taste for certain dried foods. But to keep a terrapin in good health it must be given some raw red meat, chopped earth-

worms, or tiny strips of fresh haddock or cod as often as possible. When a terrapin is introduced into a tropical aquarium, you must see that all but a clear swimming space along the front is filled with a quick-growing plant such as *Elodea densa* to take up some of the nitrogenous wastes excreted by the reptile. Further, you must siphon out solid wastes as soon as you notice them. If you fail in this duty, the aquarium will soon become polluted.

**Our aquarium was set up about a month ago, but most of the fishes we have added to it have lasted only a few days. The tank is well-planted, the temperature is kept at a steady 75°F (24°C), and I feel certain we feed the right foods in the right quantities. We started off with guppies, platys, zebra fish, neon tetras, and small angel fish. Then we added some paradise fish, blue gouramis, corydoras catfish, tiger barbs and spiny eels. Out of the above collection only the paradise fish, corydoras, tiger barbs, and one blue gourami remain alive. Can you offer any explanation?**

You introduced fishes into your tank without finding out anything about their habits and behaviour. Paradise fish will attack smaller fish, tiger barbs are fond of nipping at the waving or pendulous fins of other fishes, and even largish blue gourami can bully other fishes and their own kind without mercy. Among inoffensive species well-suited to a community tank are: neon tetras, pretty tetras, lemon tetras, black neons, pristella, golden barbs, medakas, and pencil fish. If you stock up with some of these you can hardly go wrong.

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## What is your Opinion?

continued from page 343

Well, we certainly got a good response this month, so much so, that I'll have to omit any of my own comments. It's good to see that so many aquarists are keen enough to share their findings with others, giving them the benefit of their experiences and opinions. Please print your name and address clearly, and for next month, let us have your opinions on the following questions: (1) With only four tanks, what sort of guppy breeding programme would you suggest? (2) Have you had any experiences with Spatterdocks, with Madagascar Lace Plants, or with any of the less common *Cryptocorynes* and, if so, what conditions did you find to be best for their cultivation? (3) Mr. T. A. Barr, of Mitcham, Surrey, asks for information on breeding blue acaras. Does anyone have any suggestions? (4) Can readers give the address of sources of lime-free aquarium gravel? A number of readers around the country have asked for

my help, but the postage on gravel is often much more than the cost of the gravel. Perhaps we could compile a list of sources which are spread around the British Isles, and some of these may be quite convenient to different readers. (5) What, in your opinion is the best type of filter for a small, and for a large aquarium, and what are the costs? (6) Does "Gro-Lux" affect the reproduction of live-bearers? Finally a word about a suggested specialist society for those interested in aquarium plants. The suggestion comes from Mr. R. Forder, a member of the Uxbridge and District Aquarist Society. Mr. Forder lives at 2 Field Heath Avenue, Hillingdon, Middlesex, and anyone interested in forming such a society should contact him. (I think that this is an excellent idea, and hope that it gets a good level of support from readers. Drop Mr. Forder a line whether you live near him or not. Those of us who live further away could always exchange news and plants by post.) I look forward to receiving your letters for the next feature in this series. Best wishes for the new year to all readers and writers.



## from AQUARISTS' SOCIETIES

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

**THE Loughborough and District A.S.** has increased its quota of Lectures and scarcely a month passes now without a top-line speaker being in attendance, speaking on diverse subjects connected with Fishkeeping. As a result, meetings are far more interesting than hitherto, and this change has been reflected in increased attendances and membership. The Third Annual Open Show this year has been fixed for Sunday, 14th June, and arrangements are already going ahead for this event.

**THE Doncaster and District A.S.** held its Annual General meeting in December, when the Committee was re-elected. Four additions were made to the Committee, M. Haldenby being elected as Show secretary and also the three Lady members of the Society were elected to be in charge of all rallies.

Meetings continue to be held at the Lord Nelson Hotel, Cleveland Street, Doncaster, on the first and third Thursdays of each month. A Junior section is also incorporated into the club's activities and all adult and Junior Aquarists are cordially invited to attend Club meetings.

**THE annual Christmas dinner of the Merseyside A.S.** was attended by over sixty members and friends and all spent a thoroughly enjoyable evening. There was a very good entry for the final show of the year and Derek Flack is to be congratulated on winning the Best Fish in the Show award especially as he is a Junior member. At the last meeting of the year Committee members Bill Kelly and Ken Parkes gave excellent talks on Show Standards dealing with the subject of cultivated fishes and also the points system adopted for showing. The remainder of the evening was spent by members "having a go" at judging the twenty-four fish benched for the occasion. Their results were then compared with those of two of the experienced showing members, Bill Smith and Bob Moorcroft. The member whose result most nearly coincided with theirs (the winner was in fact only out one point) was awarded a prize and he was Alan Williams, one of the newer members.

**THE Bristol Tropical Fish Club** confirm that their 1970 Open Show will once again be of three days duration and will be held on 25th, 26th and 27th June. Further details will be given as soon as possible. Meanwhile all enquiries should be addressed to E. Newman (Show Sec.), 71, Somerdale Avenue, Knowle, Bristol 4. At the December monthly meeting the Chairman, I. Littleton provided a most interesting talk on live foods and their limitations which was of particular value to the newer members.

**halamid** A FRACTION A DAY, KEEPS ALGAE AWAY

Hillside Aquatics London N12

The following officers were elected at the annual general meeting of the **Burton and District A.S.**: Chairman, J. Sharratt; vice-chairman and publicity officer, B. W. Forman; secretary, Miss M. Hicks; social secretary, N. Newman; show secretary, A. Smith; treasurer, B. Peinton; Newsletter editor, G. Mead; equipment officer, D. Toplis.

Meetings are held on the second Thursday of each month, at the Fox and Goose, Bridge Street, Burton-on-Trent, commencing at 7.45 p.m.

**THE Manchester Section of the Fancy Guppy Association** held their Open Show in December and on this occasion combined it with their Christmas Party. Over two hundred members and friends attended this event which was enjoyed by all, particularly the children who participated in the fun and games organised by the M.C. who was Jim Kelly. While the activities and games were in full swing, over three hundred fish were judged in an adjoining room and very attractive trophies were awarded to those taking first awards in the twenty three different Guppy Classes. The Best in Show Award was gained by P. Duffy who had travelled up from Nottingham for this event. The Association were very pleased to see many friends from London and the Midlands who made quite an impact on the trophies. This was a most happy event enjoyed by all and anyone interested in breeding guppies will be welcome at the monthly meetings which are held on the first Sunday in the month at the Drill Hall, Stretford Road, Manchester.

**THE Bishops Cleeve A.S.** invited the Stroud and District A.S. to the December meeting for a Table Show which was for Australian Rainbows. The exhibits were all of a very good standard as both societies bought the fish at the same time to find who could produce the best specimen. The results were as follows: 1, I. Scrym (B.C.A.S.); 2 and 3, R. J. Beard (Stroud A.S.); 4, K. R. Burton (B.C.A.S.).

**THE Social Committee of the Ealing and District A.S.** are well into their stride arranging entertainments for the winter. Already there has been a very successful Tramps Ball and in the first week of December a Fancy Dress-Pantomime theme evening was held. The competitive side has not been forgotten and recently an away match was held with Uxbridge A.S. who were the winners.

Due to some vigorous recruiting, at least a dozen new members have come along to the club's twice monthly meetings which are held at Northfield Community Centre, Northcroft Road, W.13. 1st and 3rd Tuesdays of each month at 8 p.m.

The last few meetings have been largely "home-grown" from the speaker's point of view, and the talks covered such topics as feeding, electric in the aquarium, diseases, things to make (including a very efficient power filter) and some excellent slides taken by a local aquarist. The inter-club result was as follows: 1, J. Healey (Ealing); 2, Mrs. D. Cruickshank (Ealing); 3, P. Grainger (Uxbridge); 4, J. Hesley (Ealing).

**THE Brentwood and District Aquatic Club.**—The secretary is Mrs. M. A. Taylor,

10, Tolleshbury Court, Woodland Avenue, Hutton, Essex and meetings are held every fortnight. Please contact Mrs. M. A. Taylor for details of membership.

**MEMBERS** of the **Gloucester A.S.** heard a very interesting talk at the December meeting by Maurice Stray of the Bishops Cleeve A.S., who took as his subject "Breeding". Mr. Stray an experienced Aquarist of many years standing, ranged from Livebearers, Barbs, Labyrinth and Cichlids and also gave some of his personal hints to overcome problems which breeders experience from time to time. The Table Show, which he judged, resulted as follows: 1, Norman Wood (King Cobra Guppy); 2, Mrs. M. Stoneham (Kissing Gourami); 3, Michael Brookes (Opaline Gourami) and V.H.C., B. Stoneham (Hi-Fin Sword).

Any prospective members are welcome to attend the meetings which commence at 8 p.m., or write to B. H. Stoneham, Secretary, 54, Tredworth Road, Gloucester.

**ANOTHER** large and informative bi-monthly journal has reached us from the **Southend-Leigh and District A.S.**, containing a variety of articles and club news. The club has just enjoyed one of the most successful years since its foundation and has a keen membership.

**DURING** December members of the **Bradford and District A.S.** enjoyed a Cine Show and also a Slide Show. Also in this month the annual dinner was held when the following presentations were made. The Thornley Memorial Trophy for the most points won at the monthly table show: 1, D. Kennedy, 42 pts.; 2, A. Firth, 21 pts.; 3, J. Hooper, 12 pts. The Sharp Trophy for the Home Aquaria Competition was won by Mrs. Zamirac, second being Mrs. Dennison and third Mrs. Penn.

**FOR** the December meeting the members of **Wellingborough and District A.S.** were entertained with a slide show and script hired from Highland Water Gardens which was both interesting and educational. The table show was Any Variety of coldwater or tropical species. The results were as follows: 1, Greg Smith (Speckled Mollies), 89 pts.; 2, Arthur Turman (Three spot Gouramies), 83 pts.; 3, Derek Lawrence (Opaline Gouramies), 82 pts.

**THE Privateers A.S.** were entertained at their December meeting by Mr. Philip Moorhouse. His talk was entitled "Marine Fishes" and included advice for beginners on water chemistry and equipment needed and some of the many varieties of fish that are now available to the hobbyist. He concluded by explaining some of the mistakes that a beginner might make and then answered numerous questions put to him by members.

**THERE** were over four hundred entries at the first open of the **Horsforth A.S.** and the results were as follows: A.O.V. Livebearers: 1, G. Monk (Aireboro); 2, L. Kay (Top Ten); 3, J. Whitley (Aireboro). Guppies: 1, Mr. and Mrs. Ormesher (Southport) section winner; 2, D. Gardner (S. Leeds); 3, T. Walton (Wakefield). Mollies: 1, Mr. and Mrs. Hogarth (Salford); 2, J. Whitley (Aireboro). Swordtails: 1, E. Hudson (Wakefield); 2, Pinder (Wakefield); 3, Mr. and Mrs. Cohen (Castleford). Platys: 1, S. Gear (Wakefield); 2, Mr. and Mrs. Webb (Salford); 3, S. Harrison (L.N.D.). Anabantids Small: 1, F. Buxton (Barnsley) section winner; 2, Mr. Hepburn (Castleford); 3, J. Boswell (Top Ten). Anabantids (Large): 1, Mr. and Mrs. Bone (Huddersfield); 2, C. Corns (Horsforth); 3, J. and A. Stretton (Aireboro). Fighters: 1, and 3, Mr. and Mrs. Cohen (Castleford); 2, A. E. Whitehead (Tadcaster). Cory Cat: 1, Mr. and Mrs. Ormesher (Southport) section winner; 2, E. T. Wells (Doncaster); 3, A. S.

Allison (York). A.O.V. Cats: 1, F. Polman (Stockton); 2, Mr. and Mrs. Gates (Castleford); 3, A. S. Allison (York). A. V. Loach: 1, Mr. Zamstess (Bradford); 2, Mr. and Mrs. Webb (Salford); 3, Mr. Turner (York). Barbs (Up to Rosy): 1, J. Whiteley (Aireboro); 2, Mr. Heptinstall (Castleford); 3, E. Hudson (Wakefield). Barbs (Large): 1, J. M. Allison (York) section winner; 2, J. Whiteley (Aireboro); 3, A. G. Whyte (Hallifax). Characins (Up to Bleeding Heart): 1, H. Buxton (Barnsley); 2, Mr. and Mrs. Hogarth (Salford); 3, Mr. and Mrs. Gates (Castleford). Characins (Large): 1, G. Monk (Aireboro) section winner; 2, Mrs. Deavas (Barnsley); 3, A. Ellis (I.N.D.). Cichlids (Dwarf): 1, J. Brook (Wakefield); 2, B. Mergon (Aireboro); 3, J. Whiteley (Aireboro). Cichlids (Large): 1, Mr. and Mrs. Ormsher (Southport) section winner; 2, Mr. and Mrs. Howard (Barnsley); 3, Mr. Tongue (Oldham). Angels: 1, Mr. Hargreaves (York); 2, Mr. J. Whiteley (Aireboro); 3, J. D. A. Stretton (Aireboro). Breeders (Hagglayers): 1, Mr. and Mrs. Cohen (Castleford); 2, P. Buxton (Barnsley); 3, G. Monk (Aireboro). Breeders (Livebearers): 1 and 2, P. Reynolds (Swillington); 3, L. Kaye (Top Ten). Pairs (Hagglayers): 1, Mr. and Mrs. Webb (Salford) section winners; 2, L. Long-fellow (Swillington); 3, J. Grundy (Hallifax). Pairs (Livebearers): 1, G. Monk (Aireboro); 2, Mr. and Mrs. Webb (Salford); 3, Mr. and Mrs. Ormsher (Southport). A.O.V.: 1, M. J. and A. S. Allison (York) section winners; 2, D. Kennedy (Bradford); 3, A. Whitlock (Tadcaster).

Sharks and Flying Foxes: 1, A. G. Whyte (Hallifax); 2, Mr. Colley (I.N.D.); 3, Mr. and Mrs. Gates (Castleford). Rasbora and Danio: 1, Mr. Heptinstall (Castleford) section winner; 2 and 3, Mr. and Mrs. Hogarth (Salford). Toothcrops: 1, Mr. Tongue (Oldham) section winner; 2, Mr. Greenall (Tadcaster); 3, Mr. Hatley (B.K.A.). Carps and Minnows: 1 and 2, Mrs. Deavas (Barnsley). Coldwater: 1, Miss E. Bone (Huddersfield); 2 and 3, Mr. Eason (Sheffield). A. V. Goldwater: 1 and 2, Miss E. Bone (Huddersfield) section winner; 3, Mr. Eason (Sheffield). Novice (Tropicals): 1, E. F. Hunt (Aireboro) section winner; 2, B. Manchester (Mt. Pleasant); 3, Mr. Smith (Top Ten). Novice (Coldwater): 1, 2 and 3, Mrs. Asquith (Castleford). Juniors (Hagglayers): 1 and 3, J. Dugdale (Horsforth) section winner; 2, Heptinstall (Castleford). Juniors (Livebearers): 1, Mr. Heptinstall (Castleford); 2 and 3, D. Shaw (Horsforth). Juniors (A.V. Coldwater): 1 and 2, D. Shaw (Horsforth); 3, G. Thickbroom (Castleford). Best in Show Trophy: M. J. and A. S. Allison (York). Also winner of Aquarist Gold Pin and A.V.A.S. Diploma. Best Society Plaque: Castleford.

THE highlight of Hull A.S. meeting at club headquarters was the "Fish of the Year" competition. The competition was judged by P. Carey and M. Cooper, both from York, and resulted as follows: 1, T. Douglas (Plymouth); 2, T. Collingswood (Headstanger); 3, M. Purvis (Barboro). Other competition results: Table Breeders: 1, E. Stacey (Angels); 2, Master S. Kirk (Black Line Tetras); 3, T. Collingswood (Mollies). Juniors: 1 and 2, Master S. Kirk.

RECENTLY members and friends of the Warrington A.S. gathered to see the "Bran Walker" slide show. The Fish of the Month competition for Pairs Tropical Hagglayers resulted as follows: 1 and 3, B. Piddock; 2, B. Bewick; 4, M. Millman. A. Addison (secretary) gave an illustrated talk on accessories used with the aquarium and on show were all kinds of filters, heaters, thermostats, pumps, etc. An interesting discussion followed as to what equipment was really necessary, and best suited to the aquarist needs. The Fish of the Month result for Pairs Tropical Livebearers was: 1, M. Baker; 2, C. Masklyn; 3, B. Bewick. At a later meeting J. Wooton, a club member, gave a talk on the Kingdom Arminia which was followed by a further discussion on Mollies and Cold Water fish. Once again Mr. Wooton proved he could hold the attention of his audience by the questions of interest asked after he delivered his talk. Fish

of the Month for Guppies: 1 and 3, H. Greenall; 2, Mr. and Mrs. Clarke; Mollies: 1, B. Bewick; 2, L. Crawford; 3, M. Baker. A.O.V. Goldwater: 1, 2 and 3, J. Wooton.

THE Basingstoke and District A.S. meeting for December started with a film show of interest to all in attendance and the Table Show of Barbs, A.O.V. Tropical and A.O.V. Novice was judged by Maurice Carter from Bracknell. The results were: Barbs: 1, G. Clewer (Nigger Barb); 2, A. Blake (B. Binaculatus); 3, G. Clewer (Rosy Barb). A.O.V. (Tropical): 1, R. Ilsey (Red Fighter); 2, A. Blake (Corydoras Palcosus); 3, A. Clark (Thick Lip Gourami). A.O.V. (Novice): 1, R. Ilsey (Red Fighter); 2, D. Platt (P. Kribensis); 3, R. Ilsey (Red Fighter).

Anybody interested in becoming a member will be welcomed. The meetings are held at the White Hart, London Road every other Friday commencing January.



## The Aquarists' Badge

PRODUCED in response to numerous requests from readers, this attractive silver, red and blue substantial metal emblem for the aquarist can now be obtained by all readers of *The Aquarist*. The design is pictured here (actual size). Two forms of the badge, one fitting the lapel button-hole and the other having a brooch-type fastening, are available.

To obtain your badge send a postal order for 3s. 6d. to *The Aquarist*, The Burrs, Half Acre, Brentford, Middlesex, and please specify which type of fitting you require.

AT the second annual general meeting of the West Cumberland Aquarists Club the following Officers were elected: Chairman, S. Martin; Treasurer, R. Strand; Secretary, J. Parker; 2, Southby Avenue, Oreigill, Egremont, Cumberland. Committee: J. Batey, W. Frain, J. Hall, R. Mitchell, and I. Sharp.

The Mr. and Mrs. Eric Wilson Challenge Shield for most points gained in table shows during 1969 programme was won by J. Parker, the runner-up being S. Martin.

Since the last annual meeting the Club has participated in two inter-club Shows with the Bampton Club, Carlisle and were winners on both occasions by a very narrow margin. Both shows were well supported, the number of entries and quality being very encouraging, providing a difficult task for the judges.

THE main speaker at the December meeting of the New Forest A.S. was Mr. Henry Earle of Bournemouth A.S. and his subject was "Fish Food and other Feeding." This developed into an interesting discussion during which a wide range of goods was revealed by Club Members, from breakfast cereals, to chopped earthworms—and on to spinach.

Another item on the agenda was the presenta-

tion of Prize Cards in connection with the third leg of the triangular match with Bournemouth and Salisbury. Bournemouth was the winner with New Forest as runners-up. The table show results were as follows: Fighters: 1, M. Lee; 2 and 4, D. Hare; 3, A. Williamson. Rasbora: 1, D. Harding; 2, M. Aust; 3, D. Hare; 4, R. Menhennet.

THE following officers were re-elected for a further twelve months at the annual general meeting of the Accrington and District A.S. President, M. Scarfe; Chairman, H. Smith; Vice-chairman, A. Isherwood; Treasurer, M. Scarfe; Hon. Secretary, C. Whitsey; Publicity Officer, G. Todd. The chairman felt that the club needed more members and a varied and attractive programme is being drawn up of lectures, fish shows, film shows etc. for the meeting nights.

A mini jar competition was held at the last meeting and was won by H. Whitcombe of Basendon who also won the 1969 trophy for table shows. All old and new members are invited to attend these meetings which are held at the Boats Head Hotel every second Wednesday of each month, and those interested are invited to contact C. Whitsey, 47 Lynwood Road, Blackburn or G. Todd, 97 Bold Street, Accrington.

THE officers of the South Park Aquatic (Study) Society for this year are—Chairman: R. E. Dudley; Secretary: Mrs. M. Dudley, 163, South Park Road, Wimbledon, S.W.19; Treasurer: F. Glyn; Show Secretary, D. Dudley. Clubs interested in Cold-Water matches are invited to contact the secretary.

THE month of December was quite a busy one for the Brighton and Southern A.S., starting with a Being and Buy Sale and a Furnished Aquaria competition, the results of which were as follows:—1, H. Madison; 2, D. McFarlane; 3, R. Smithers. The second meeting in December was the occasion of the table show for the Fish of the Year and a showing of slides with accompanying lecture, both being supplied by John Kall.

Results of the Fish of the Year show were as follows: 1, D. Soper (Knife Fish), 83 points; 2, P. Tee (Betta), 81 points; 3, J. Pelham (Crown Barb), 80 points; 4, E. Cox (Yellowtail Rasb), 80 points.

At the end of December the annual members quit was held. There were forty questions, some of which were sub-divided to give a total of fifty possible marks. Top scores were as follows: K. Orange 371, C. Wickham 36 (Junior winner).

The Society is always pleased to greet visitors or new members, so anyone interested in joining or who would like more details should contact the Secretary, A. Shelton, 45 Coventry Street, Brighton.

IN November M. Burch of "Mickfield Tropicals" paid a visit to the Norwich and District A.S. and gave a very interesting talk on "Setting up a Marine Aquarium". This was greatly enjoyed by the members and certainly took some of the fears out of keeping Marine Tropicals. The "Philip Wayne Annual Trophy" was presented at the December's meeting. After a closely fought contest throughout the last six months of 1969 the trophy was finally won by D. Lansdell, second being M. Barker with a tie for third place between D. Ajer and A. Langham. It is hoped to get even more entries for the monthly table shows in 1970. Unfortunately owing to sickness the attendance was slightly down for the annual general meeting, but despite this a very interesting meeting was held.

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with some very good ideas coming from the members to help make 1970 an even better year than 1969. The committee was elected and is as follows:— President, Philip Wray; Chairman, H. Bussey; Vice-chairman, A. C. Coe; Hon. Secretary, P. Groves, 35 Folly Road, Wymondham, Norfolk; Hon. Treasurer, V. Burrow; Committee: A. Buck, D. Martin, J. Steward; Show Secretary, C. Williamson, 24 Magdalen Road, Norwich; Assistant Show Secretary, J. Spooner.

The Society meets on the first Thursday in every month at the Co-operative Hall, Earlham Green Lane, Norwich and would be very pleased to see new members or if any members of other societies who are up in this part of the world on holiday during the summer.

THE officers of the **Tottenham and District A.S.** for 1970 are as follows: President, N. Harris; Chairman, K. Nutt; Secretary, A. Field, 154 Walpole Road, Tottenham, London, N.17; Treasurer, L. Clements; Show Secretary, S. Mooney.

GLAZING an Aquarium was the subject of a meeting of the **Hemel Hempstead A.S.** Both conventional methods (with frames and putty) and modern methods (using silicone rubber sealants) were demonstrated and discussed.

Results for a table show for Barbs and Cichlids were:— Barbs: 1, S. Collins (Tainfold); 2, D. Chalk (Honey); 3, M. Searcy (Barnfield) (Tiger). Cichlids: 1, P. Tucker (Severum); 2, T. Craddock (Texas); 3, A. Dibbey (P. Kribensis).

RECENTLY members of the **Bristol A.S.** met for a social evening, and it was the feeling of most members that a similar night out would be desired in the near future, possibly with a larger gathering of friends in attendance.

The monthly general meeting was held at the usual venue, Bishopston Parish Hall and this was rather different than usual fish-keeping taking back seat for a change and being replaced by a film show of a light-hearted nature, the programme containing a Comedy, two travelogues and a documentary. Charlie Chaplin and Charlie Chase were seen at their best in the silent slap-stick comedies, and the other films covered two holiday areas of the world in "New England Holidays and South Africa's Animal Compound" (The Kruger National Park) and the Queen, before the Coronation, with Prince Phillip in the Documentary "Across Canada". The commentary for the latter film was by Bernard Braden and Barbara Kelly. A vote of thanks was accorded to Mr. A. G. Cross, the guest projectionist for a truly entertaining session.

AT the last meeting of 1969, **Ealing and District A.S.** had a full audience. The Chairman ably demonstrated the Club's latest acquisition—an Epidiascope—and while this was in progress, the club members took part in a judging competition. The classes on the bench were Barbs, Characins, Cichlids and Livebearers. Before the competition began, the epidiascope was used to illustrate the classes pictorially and their vital statistics were outlined.

Later, many questions were put to the Chairman, who endeavoured to answer them with the aid of various reference books brought along to test the new "toy". The competition was an interesting experience, and two or three mem-

bers got pretty close to the judge's result sheet points; the winner was Mr. Turner, a newcomer to the club, but obviously no newcomer to the hobby and recently, the Club had an away match with Becknell A.S. This was very enjoyable, a close match ending with the result a narrow victory for Becknell by a few points.

#### SECRETARY CHANGES

**Four Star A.S.:** W. Turner, 59, Highfield Road, Hemsworth, nr. Pudsey, Yorks.  
**Medway A.S.:** A. Clark, 6, Holand Road, Chatham, Kent.  
**Wakefield A.S.:** A. Hudson, 27, Hall Fold, High Burton, Huddersfield.

#### AQUARIST CALENDAR

**22nd February:** Rotherham and District A.S. Open Show at Devil Hall, Fitzwilliam Road, Rotherham. Schedules are obtainable from C. Raybould, 52, Dovercourt Road, Rotherham, Yorks.

**1st March:** Keighley A.S. Open Show.  
**8th March:** Huddersfield T.F.S. Open Show to be held at Cambridge Road Bath, Huddersfield.

**21st March:** East Dulwich A.S. Second Open Show at St. Barnabas Parish Hall, Dulwich Village, S.E.21. Details available from D. E. Sutton, 231, Friern Road, London, S.E.22.

**22nd March:** Top Ten A.S. second Open Show at the Huddersfield Town Hall, schedules obtainable from Show Secretary Mrs. B. Searcy, 995, Manchester Road, Littlewalton, Huddersfield or Secretary, L. Kaye, 1, Tomies, Scholes, Huddersfield.

**28th March:** Nelson A.S. Open, Nelson Civic Centre, Stanley Street, Nelson. Schedules from B. Tate, 12, Priory Close, Bingley, Yorks.

**18th April:** Reading and District A.S. Annual Open Show, Brock Barracks, Oxford Road, Reading. Show Secretary, B. Grant, 20, Dover Street, Reading, Berks. Reading 53000.

**18th April:** Thurrock A.S. Third Open Show. New Venue: Arthur Street School, opposite the Society headquarters. Coldwater Classes included. Show schedules and information obtainable from D. C. M. Durrant, 22, Kingsman Road, Stanford-le-Hope, Essex.

**24th-26th April:** Stockton-on-Tees A.S. Fifth Annual Show at St. Peter and Pauls School, Durham Road, (A.177) Stockton-on-Tees. Schedules available shortly.

**2nd May:** Derby Regent A.S. Open Show Sherwood Foresters Recreation Centre (Normanton Barracks) Osaston Park Road, Derby. (Follow R.A.C. Signs). Show schedules from E. Handline, 57 Tewkesbury Crescent, Chadde-den, Derby.

**3rd May:** Bury and District A.S. Open Show.  
**9th May:** Medway A.S. Open Show (Provisional Date).

**10th May:** Association of Yorkshire Aquarist Societies Annual Open Show. Full details later.

**10th May:** Accrington and District A.S. Open Show at St. John Ambulance Hall, Bull Bridge, Accrington. Details from C. H. Whitley, Hon. Secretary, 47 Lynwood Road, Blackburn.

**16th May:** Southend, Leigh and District A.S. Open Show, St. Andrew's Hall, Electric Avenue, Westcliff. All enquiries to Show Secretary, Malcolm Upton, 12, Merrivale, Benfleet, Essex.

**16th May:** Uxbridge and District A.S. Annual Open Show at The Meadow School, Royal Lane, Hillingdon, Uxbridge. Show schedules available from N. V. Lee, 46, Alredale Road, Ealing, W.5.

**17th May:** Merseyside A.S. Open Table Show.  
**31st May:** Coventry Pool and Aquarium Society. Open Show. Foleshill Road Community Centre. Show schedules (S.A.I.) from Show Secretary, S. Woodbridge, 32, Ridgeway Avenue, Coventry, CV3 5BP.

**13th June:** Llanrwst Major A.S. Open Show, Town Hall, Llanrwst Major.

**14th June:** Bournemouth Aquarists Club Annual Open Show. Further details to follow.  
**14th June:** Loughborough and District A.S. Open Show.

**21st June:** Swillington A.S. Fifth Annual Open Table Show at Swillington School.

**25th-27th June:** Bristol Tropical Fish Club Open Show at Congregational Church Hall, Newton Street (nr. Stapleton Road), Bristol 5. Details from E. Newman (Show Sec.), 71, Scemdale Avenue, Knowle, Bristol, 4.

**28th June:** Alfreton and District A.S. Annual Open Show, to be held at the Adult Education Centre, Alfreton Hall, Alfreton. Details from the Show Secretary, S. Hill, 35, South Street, Riddings, Derbyshire.

**28th June:** Northwich and District A.S. Open Show. Particulars of venue will be announced later.

**5th July:** High Wycombe A.S. Open Show, West Wycombe Hall, West Wycombe, Bucks.

**5th July:** Lytham A.S. Open Show at Lowther Pavilion, Leather Gardens, Lytham, Lancs.

**7th July:** Lincoln and District A.S. Venue details later.

**10th-12th July:** Aquarist and Pondkeeper Fishkeeping Exhibition, Alexandra Palace, Wood Green, London, N.22.

**11th July:** Basingstoke and District A.S. Open Show. Details from A. Blake, 50 Bounty Road, Basingstoke.

**12th July:** Grantham and District A.S. First Open Show, Guildhall, St. Peter's Hill, Grantham. Schedules available mid-February from Show Secretary, S. Paver, 59 Alexander Avenue, Newark, Notts.

**19th July:** Barnsley Tropical Fish Society. Open Show. Venue to follow.

**1st August:** Stroud and District A.S. Third Open Show, Archway School, Pagenhill, Stroud, Glos. Schedules and information from Show Secretary, P. L. K. Treadgold, 15, King's Road, Rodborough, nr. Stroud, Glos.

**22nd August:** Yeovil and District A.S. Open Show at Grass Royal Secondary School, Yeovil. Details from D. M. Phinn, 5, Hill Terrace, Bower Hinton, Martock, Somerset.

**22nd September:** Four Star A.S. Second Annual Show. Further details available later.



## BRITISH AQUARISTS' FESTIVAL

will be held this year  
on the 10th-11th October,  
at Belle Vue Gardens,  
Manchester.



