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the *Aquarist*

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The Editor accepts no responsibility for views expressed by
contributors.

Editor: Laurence E. Perkins

October, 1968

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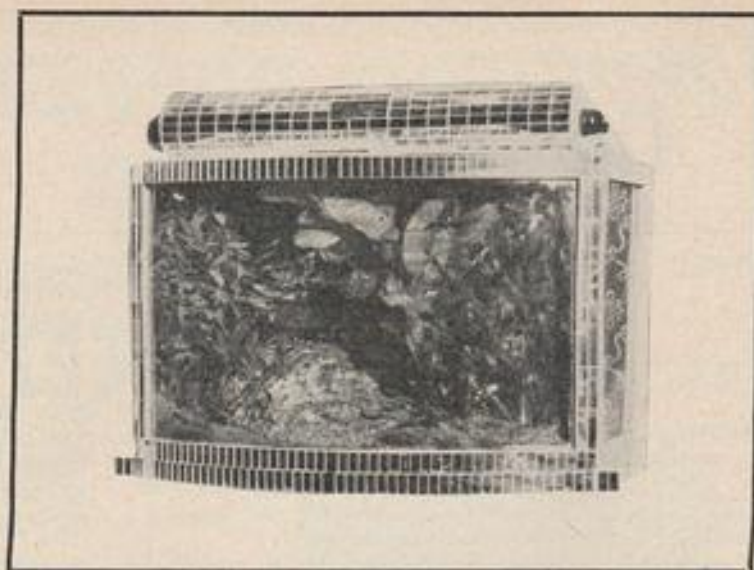
Decorative Furnishings

by B. Whiteside

ONE DOES NOT have to have attended art college to be able to produce a most attractive and pleasing interior in an aquarium, but when one sees some of the monumental travesties which are accepted as being natural-looking or even aesthetically pleasing, one wonders if it would not help! One has only to look at the range of plastic and porcelain ornaments (or should we say eye-sores?) that are available to know that the natural-looking aquarium, which depends upon good taste and natural decorations, is something which the dedicated aquarist should endeavour to encourage by any means possible.

It is hard to try to dictate or lay down hard and fast rules as to how a natural looking aquarium should appear. In fact, if one had the chance to examine the river bottoms of those areas from which many of our fish originally came, one would possibly think that it was the last thing that one wanted to imitate in the home aquarium. One must, therefore, produce an aquarium setting which looks like what is hoped a river bed should look like, and I would doubt if there would be any sunken ships, mermaids or frogs blowing bubbles!

Are there any rules which would help us to make an aquarium arrangement which would be both pleasing to look at, and possibly both natural looking to the inhabitants and to the aquarist, even though neither may have ever been anywhere near a tropical river? In painting a picture one can follow specific rules and produce an acceptable result and in the arrangement of aquarium decorations one can imagine that one is



dealing with a three dimensional picture which, in fact, one virtually is. There are several facets of arrangement which one can follow and which, when combined with the aquarist playing it by ear, or should I say sight, will produce a result which should be acceptable.

The main items which will be used to decorate the aquarium will be fish, rocks, plants and gravel. In choosing these one must consider such facts as height, size, colour, texture, form, position, etc. All these items will be limited by what is available for sale and collection. Possibly the gravel will be an item for which the choice of colour, size and texture will be rather limited. Try to obtain a gravel which is not too bright or dark in colour. Gravel can be obtained which is bright and glowing in a number of daring colours as well as black and white. Personally I would avoid these as they do not seem very natural; however, a tank with gravel which was all black could probably look very attractive. Insist that the gravel which you buy is free from pieces of limestone or shell fragments. This can save a lot of trouble later. Such gravel will probably be dearer than ordinary stuff but the extra money will be well spent.

The question of rocks I have covered in a previous article but they should be in a colour which blends in with the colour of the gravel and they should

be such that they do not contain any substances which are soluble in water. If you are collecting your own rocks, as you probably will be, bear in mind the size of the tank for which they are intended and choose ones of a suitable size. It is better to have a few large rocks rather than a host of tiny ones. Pick rocks which have few or no sharp edges. These will look more natural. Bring some medium sized and small rocks as well, as these will probably come in handy for completing your aquatic scene. Should you have more than one tank to decorate, bring plenty of rocks, as there are bound to be some which you will find will not look suitable in the tank no matter how they are positioned. Remember that a few medium sized rocks, lifted single, seem to weigh very little but altogether they can combine to produce a considerable weight so come prepared. The rocks should be washed before use.

A favourite term in some books for the aquarist is the centre-piece. If a major object of decoration is placed exactly in the centre of the aquarium, it tends to make the tank look as if it was cut into two halves. Similarly, if a row of rocks are placed exactly along the centre of the aquarium, the tank again looks as though it were cut in two, in the other direction this time. A useful idea is to imagine that the floor of the tank has been marked

out by two equally spaced lines running from left to right, and by two more equally spaced lines running from front to back, just as one marks out a design for a game of noughts and crosses. This will split the area of the base into nine equal rectangles. The important points in the design are the four spots at which the lines cross. Viewing the tank from the front to the back, these four points lie with two at the front third and two at the back third. If the decorations for the aquarium are placed with the main points of interest here, the tank should appear pleasing to the eye.

I try to arrange my rocks so that two fairly large rocks are placed one in each position. I place my rocks on the two rear points so that the front two-thirds of the tank are fairly free of decorations and thus the fish can be seen. The centre portion of the tank, between the two main rocks, is arranged with smaller pieces of rock. Don't be afraid to use large rocks. They give a sense of "body" to the tank and help to integrate smaller pieces of rock. If possible, use rocks which are not too deep. This allows plenty of space behind the rocks and hence leaves more room for planting. If necessary, smaller pieces of rock-work can overlap the larger pieces or vice versa. This helps to give the illusion of depth. A piece of paper cut to the size of the aquarium base and marked out with the four lines as stated above can be used to try out the arrangements before finally positioning them in the tank. Another factor can be considered here: it is very helpful if the rocks can be used to hide heater, thermostat, filter, etc., and if these can be concealed behind the rocks, all the better.

After adding gravel, rocks, heater, thermostat and filter, water can be added to the tank. If it is filled about half full, it is easier to plant the plants than if the aquarium is completely filled.

The question of what plants to use depends entirely upon personal preference but it is often better if the taller and large growing plants are placed to the rear of the aquarium. The aim should be to hide the upright corners of the frame at the rear to help conceal the rectangular shape of the tank. The back and side glasses of the aquarium can be screened with tall growing plants several of which should be planted in the front corners,

once again to distract from the glass box effect. Short or dwarf plants can be used in the front portion of the tank and slightly taller ones can be planted in front of the rocks to help soften and break up their lines. Colour should be considered when choosing plants. There are available now, plants in many shades of dark and light greens, as well as shades of purple, red and brown. Contrasting dark and light shades can be arranged together to add interest, as can broad-leaved plants and those with feathery foliage. Although plants have a better chance of flourishing if they are left alone, you may find that certain plants look out of place when they get a little larger. As the plants and rocks are not stuck to the floor of the tank, don't be afraid to move any item which looks out of place. Some aquarists seem to think that their first arrangement is permanent. Of course this is not the case and it often pays to experiment until a satisfactory arrangement is found. Even then, it adds interest to the tank if, occasionally, the odd rock is exchanged for a new one, and an odd plant replaced with a newly available type. Remember that in a river the continual flow of water is bound to move gravel and rocks occasionally and that although plants usually have specific zones in which they grow, the dominant species may vary with the seasons. Don't be afraid to use gravel, rocks and plants lavishly. The number of fish which you can keep in a given sized aquarium is limited but these other three items do not have to be kept to a minimum. The idea of a row of rocks across the centre of the tank and a dozen or so plants stretched out behind these leaves a lot to be desired, as does the old and often repeated idea of putting several inches of gravel at the back of the tank and having it slope down to about half-an-inch at the front. This technique was supposed to cause mulm and sediment to settle at the front glass where it could be siphoned out easily. I have found that most of the mulm settles at the back of such a slope and amongst the plants where it will eventually be used by them. With modern methods of filtration and efficient vacuum cleaners for aquaria, this sloping of the gravel seems rather purposeless to me and there is little reason to continue with it. The gravel will probably level out anyway and thus the excuse of it climbing up

the front glass and spoiling the illusion of a tank without glass holds little water, to use an appropriate cliché. I do not consider that it spoils such an illusion, if it exists at all, outside the pages of a text book. Should the small amount of gravel which can be seen against the glass annoy anyone, that section of glass can be painted to the required height to mask it. Try piling the gravel up in heaps here and there to form an undulating surface. This is more natural than a sloped surface. Several pieces of flat rock may help to hold the gravel in position although it may eventually level out.

Although rocks have an important part to play in the decoration of aquaria, the main decorative effect comes from the plants. Plants certainly grow at varying rates but the most common complaint which I find with decorated aquaria is that they are under-planted. Try buying twice as many plants as you would have thought necessary if you are not really sure about how many your tanks need, and fit them in carefully. Nothing will help the look of a tank more than a good host of flourishing plants. Should you at a later date see a plant which you admire, buy one and try it. If there is not much room in your tank for it, root out a few of the others and give them to a friend, or sell them. Someone can usually be found who has a tank short of plants and they will be glad to have them. As the plants in your tank grow, the tops can be cut off and planted as cuttings and the bottom parts replaced. Some people may put forward the standard idea about over-planting a tank, i.e., that the carbon dioxide released by the plants will damage the fish. I have one particular tank which is crammed with plants of many varieties and all of which are thriving well and the tank is also stocked to capacity with small species of tropical fish. As both fish and plants are in excellent form I would consider that the carbon dioxide theory is grossly over rated in this context. This over-planted tank is the one which gets most attention when visitors call.

Some of these ideas may have thrown convention to the winds but I hope that it has stimulated a lot of people to consider their aquarium layout and perhaps caused them to do something about it if necessary.

What Is Your Opinion?

by B. Whiteside

I RECEIVED ONLY TWO letters as the result of the questions at the end of the last article in this series. Concerning the question of hatching cichlid eggs away from the parents, Mr. A. Marshall, of Chesterfield, Derbyshire, says that his experience is limited to *Pelmatochromis kiribensis*, *A. ramirezi*, *Nannacara anomala* and orange chromides. He has not tried to breed or hatch angels but thinks that they would need the same conditions as the above fish. Mr. Marshall thoroughly cleans a small tank, say, 16 in. x 8 in. x 8 in., and fills it with tap water. He fits heater, thermostat and aeration stone weighted with lead. Plants, gravel, etc., he considered are not needed. The temperature is set at the same as that of the tank from which the eggs are to be removed.

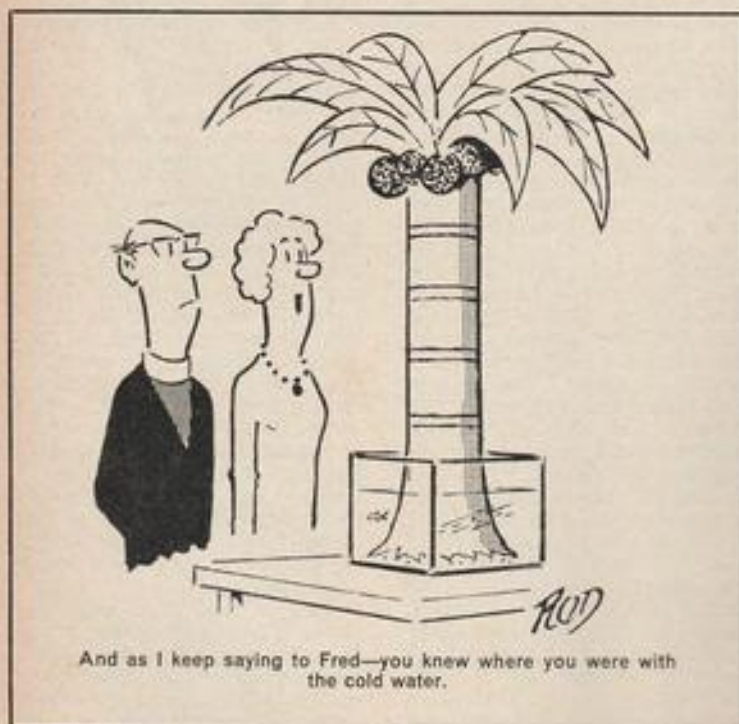
Mr. Marshall goes on to say that the plant pot, pebble, or slate, on which the eggs have been laid, is gently removed as soon as possible after spawning, and placed gently

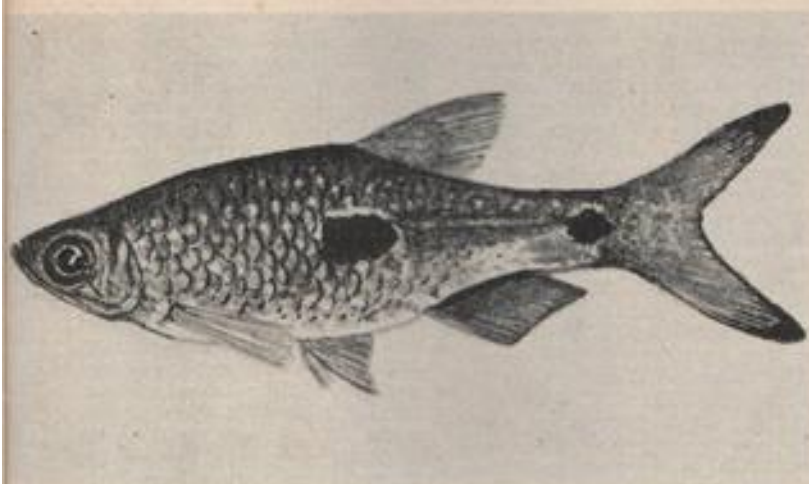
on the bottom of the prepared tank, with the aeration stone about 1 in. from the eggs. (He says that the brief exposure of the eggs to the air, does not seem to do any harm). A very gentle aeration is started and methylene blue is added in drops until it is impossible to see the plant pot, etc. For the next few days it is only necessary to see that the aeration is continuous. By the seventh day the fry will be free-swimming, and the water will almost have cleared. In the case of *P. kiribensis* and *A. ramirezi*, brine shrimp may be given immediately they are free swimming, but orange chromides need infusoria for the first week, or they will die. Mr. Marshall ends by saying that he has used this method many times and that he finds that only a small proportion of eggs fungus over.

From Wellington, Salop, Mr. P. K. Brown writes on two subjects. In hatching angel fish, he has found that a tall sweet jar, filled with water from the tank in which the eggs were laid, should have an air-stone operating just strongly enough to keep the dirt from settling on the eggs. If this method is used, Mr. Brown says that care must be taken when moving the fry to the rearing tank. If the fry are reared in the jar, great trouble must be taken to prevent the water from becoming foul.

In answer to another question Mr. Brown says that the water at his home in St. Helens, is soft, DH5°, and neutral. He finds that the following plants grow well with him: water lettuce, water wisteria, *Vallisneria*, *Sagittaria*, Amazon swords, *Aponogetons* and *Cryptocorynes*. The following he has not been able to grow well: Chain swords, *Cubomba* and hair grass.

Three more questions for the next article: (1) What arrangements did you make to have your fish looked after whilst you were on holiday this year? (2) What is your favourite aquarium fish and why? (3) Why is tropical fish-keeping so much more popular than cold-water fish-keeping?





Rasbora *elegans*

by Jack Hems

FOR THIS LARGER-than-usual *rasbora*, popularly known as the elegant or yellow *rasbora*, a tank allowing plenty of swimming space is essential. And if such a tank is available, then *R. elegans* (it is not unlikely that this formal name is outmoded because Professor Guenther Sterba, in his *Freshwater Fishes of the World*, describes it under the scientific name of *R. lateristriata elegans*) is certainly worth searching for.

The elegant *rasbora* is indigenous to the Malay Peninsula, Sumatra, Borneo, and, in all probability, some of the several islands beyond. The general colour is dull silver, rather brownish on the back, but shading to yellowish on the sides, though shifting tints of lavender, pink, blue, and greeny gold may be seen according to the light. The scales are edged with black. An elongated black, or blue-black, blotch adorns the middle of the

sides. A similar, but more rounded, marking is present on the base of the tail. Sometimes these markings are seen to be linked together by a narrow line of subdued metallic blue. A black marking extends the entire length of the anal fin-base. The fins are tinged with yellow to orange, the anal and caudal fins dark-margined posteriorly, the caudal fin with the tips of the lobes splashed with black.

As I have mentioned already, *R. elegans* grows larger than the usual run of *rasboras*—attaining a length of about 5 in. under good conditions. The giant of the genus—at least of those species known to the tropical aquarist—appears to be the greater scissortail, *R. caudimaculata*, which probably exceeds 8 in. in the wild state, and certainly (if given the space for development) seems to outgrow any of its congeners kept in captivity.

The elegant *rasbora* shows no interest in other fishes, that is to say it does not follow them about and alarm them with over-much curiosity, or rush at them with the intention of biting at their sides or fins: in a word, it is entirely inoffensive. It swims in all parts of the aquarium, though when a strong light illuminates the surface it will not leave the upper levels of the water, so eager is it for food. It has a hearty appetite and will clear up a sprinkling of dried food in the proverbial no time. Dried foods are accepted as readily as anything else eaten by any non-faddy omnivorous species.

Reliable writers on aquarium fishes record that it breeds like a typical barb. Sexing is not always easy in stunted or youngish fish, but in well-grown fish a female may be told apart from a male by her more padded sides and larger size. Also, a male in breeding condition may be picked out by his more brilliant colours.

The tank most likely to trigger-off egg-laying is a well-lighted and well-planted one; and one filled with soft and slightly acid water. The female releases batches of eggs, after the manner of a roe-filled barb, during drives which are punctuated by body-pressings among the plants. When spawning is over, the spawners must be removed from the tank before they set to and devour the eggs. The eggs incubate in under forty-eight hours and the fry are said to forge ahead on the usual flour-fine dried foods, and the rest.

R. elegans is hardy enough to stand a temperature (not too protracted, of course) down to about 66°F (18°C) without suffering any harm. A temperature of about 78°F (25°C) is recommended for spawning.

To sum up, *R. elegans* is a fish ideally suited to the experienced and novice aquarist alike and almost always excites admiration and interest when it is seen cruising about in a tastefully planted decorative aquarium given over to some of the larger species such as the giant danio, the splendid silver shark, the pearly moonlight gourami, and the like.

Marine News and Views

by Trevor Wild

RECENTLY, a lot of controversy has blown up about the introduction of a potent fungicide in the Dow Corning aquarium silicone rubber sealant. However, the genuine aquarium product is now available and it appears safe. I myself have experimented with various sealants in the manufacture of all glass aquaria. Certain writers state that these silicone sealers can build 50-gallon frameless aquaria. The following saga disproves the previous erroneous statement. About nine months ago I designed and constructed an aquarium of glass sheets bonded together by a sealer measuring 42 in. x 15 in. x 12 in. Before installing it indoors, I placed it in the garden and filled the tank with tapwater. The result can only be termed disastrous. Seconds after the aquarium was filled, to the accompaniment of splitting glass, the bonding agent crumbled, and the ground was inundated with thirty gallons of water. On examination, it appeared that the sealer binding the base to the other pieces had failed to withstand the pressure and the resulting exodus of the water shattered every piece of glass.

Experience has shown that aquaria of all glass construction can be made as long as they do not exceed a certain size. I have at present an aquarium made with glass and rubber sealant which is 30 in. x 15 in. x 12 in. Unfortunately the sides bow and a restraining piece of wood has to be used to keep the tank in a conventional shape. All in all I would suggest that tanks larger than thirty inches long, and more than twelve inches deep should not be completely filled. However, they are admirable for marine aquaria, and for quarantine and breeding purposes.

News has reached me recently that Lee Chin Eng of Djakarta, Indonesia, has been having more breeding success with marine fishes. Lee is, you will remember, the original exponent of the "natural method" of coral fish management. In his living coral reef aquaria at Prinsen Park Aquarium, he has had repeated spawnings of the *Amphiprion* species, *Premnas biaculeatus* and the striped and carneau damselfish. The young have always died at the free swimming stage and so something must be lacking.

Anyone who can overcome this problem will certainly be a great marine hobbyist. However, so little is certain of marine fishes that the fact that we can persuade our pets to spawn is indeed an achievement.

The bane of all marine aquarists is an ever-decreasing pH. This can usually be remedied by the addition of sodium carbonate (washing soda) to the water. The danger in this is that a sudden change in the pH can be fatal to the aquarium inmates. To solve this, Rila Products of America have brought out bags of crushed calcium carbonate. This can be used as either a filter medium or as a floor covering. The pH is always alkaline as the calcium slowly dissolves into the water neutralising any acidity. This product should soon be available in Britain under the name Rila pH Pebbles.

I've heard recently of many marine hobbyists who have no supplier of marine fishes and who cannot find a dealer who will send fishes through the post. This no doubt is what is stopping many other would-be mariculturists from taking the plunge. I have been in touch with a well-known importer who will ship through the post and if several aquarists will buy "in bulk" as it were, a large discount will be allowed. Any aquarists who are interested in this scheme, or any marine clubs who wish to purchase quantities of cut-price fishes, should write to me, c/o *The Aquarist*.

On inspecting my ozonizers the other day, I notice that a pump which normally delivered five litres of air per minute, only gave a quarter of that amount when connected to the ozonizer. This appeared very curious, so throwing caution to the winds, I opened the casing. The plastic piping inside was badly constricted and there was a leak in the actual electrical chamber. The remedy was simple—new tough tubing replaced the old pliable stuff, and a touch of rubber sealant fixed the leak. Now I can get my five litres even when the pump is working with the ozonizer. I hope my tale has helped others who have the same problem.

If any marine aquarists have any views and/or tips, please pass them on to me c/o *The Aquarist*, and we'll print them for the benefit of other saltwater aquarists.



“Champion of Champions” Contest

**Saturday & Sunday
Oct. 26-27, 1968.**

*See the “Elite” of
the fishkeeping world
in the . . .*

***The biggest event in the
aquarists' calendar***

Note the date—don't miss it

**British Aquarists' Festival
Belle Vue, Manchester**

The unique opportunity of seeing the aristocrats of the aquarium world in competition is again provided in the second “Champion of Champions” Contest, to be staged at the 1968 British Aquarists Festival at Belle Vue, Manchester, on 26-27 October.

Sponsored by *The Aquarist and Pondkeeper*, this premier contest brings together the winners of “Best Fish in Show” awards throughout the year, from which the judges select the one qualifying for the honour of being “Champion of Champions.”

Everything points to a strong entry, exceeding the big display for the initial contest last year. These potential National Champions will be a focal point of interest for the thousands of visitors to Belle Vue, for whom the “Champion of Champions” contest has provided a new peak in the skills and standards of fishkeeping. The winner of the Contest will receive an inscribed plaque, a 9-ct. gold lapel pin inscribed “Champion of Champions,” and a cash prize of Twenty Guineas. Similar plaques will be awarded to the second and third place winners, with cash prizes of Thirteen and Seven Guineas respectively.

The 1968 B.A.F. promises to be the “biggest ever,” occupying more space and exhibiting a much greater assembly of fish than last year. Societies have been hard at work on ideas for their stands and we can look forward to many intricate and impressive results from their ingenious designs. Commercial exhibitors, too, have recognised the fast-growing popularity of this outstanding Festival and will be showing a huge variety of attractive fish and up-to-date equipment.

The B.A.F. and the “Champion of Champions” Contest are pre-eminent attractions for all aquarists throughout the country, and a record attendance can be confidently anticipated.

Breeding goldfish

Methods for Success

by A. Boarder

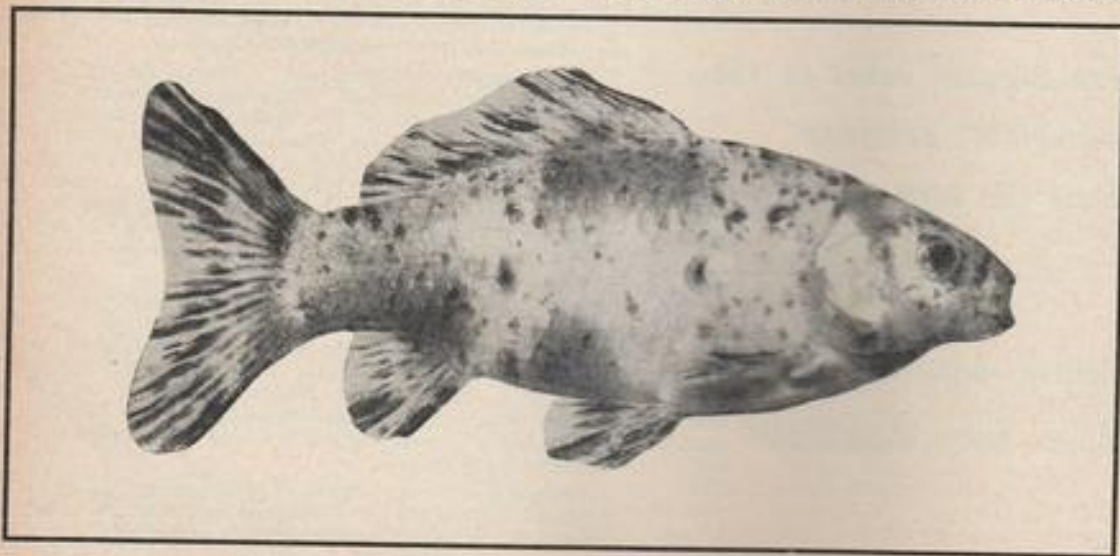
THERE ARE VARIOUS methods used for breeding goldfish and these can vary with the types of goldfish being bred. The breeder who concentrates on obtaining fancy goldfish of a high standard, probably for exhibition, may use methods differing from those of pondkeepers who just wish to breed a few goldfish to add to the numbers in their pond. Although all varieties of goldfish breed in a similar manner, there is a great deal of difference as to which procedure the breeder will adopt. Most fish bred from a good strain of fancy goldfish will have been produced by a special method which ensures that the best fish only are used as breeders but where some ordinary goldfish are required to increase the stock in a garden pond, it is likely that the breeding will be of a type of hit and miss effort.

The specialist breeder will be more concerned with the quality of the fish rather than their numbers and may only breed in tanks so that he is certain of the parentage of the fry. In a pond where there may be all types of goldfish it is probable that few, if any, of the youngsters will be of any use as potential show fish or of value as breeders. To obtain the best types for exhibiting or for forming a strain it is essential that not only should the best fish available be used but that the breeding is strictly controlled. In such a case it is better to use a female and one or two males of known parentage and to have these fish in a fair sized tank. When they spawn in such a restricted area it is almost

certain that there will be more fertile eggs than if the fish had bred in a garden pond where many of the eggs may not get fertilised.

The goldfish is a form of Carp and it is said that a Carp can lay over 63,000 eggs per pound of its weight. Although many breeding goldfish may not weigh more than a quarter of a pound this still allows for a few thousand eggs per healthy goldfish. The average breeder would no doubt be satisfied with about a thousand eggs from each female, but this is by no means the end of the story. It is the number of fertile eggs which will be the aim of the specialist breeder rather than the number of eggs laid.

Where goldfish are allowed to spawn in the garden pond it is probable that only a very small proportion of the eggs laid are fertilised and hatch out. In an experiment with controlled spawning I used one eight-month-old female goldfish (a fantail) to two males. These were kept in a rather small concrete tank with slight aeration and with a temperature of about 62°F. A number of eggs were laid and the fish were then moved to another similar tank where they again spawned. From these spawnings nearly two thousand fry hatched out. It is probable that if the fish had been in a garden pond only a few of these eggs would have been fertilised. The sperms from the male fish have to search out and penetrate the eggs and obviously the more area to be covered the less likelihood there is of a large per-



centage of eggs getting fertilised. In the small tank, however, the sperms would have a much smaller area in which to move around and so it would be probable that a very large percentage of the eggs would be fertilised. There is also the probability that many eggs would be eaten by the fish in the pond. It rarely happens in an open pond that all the fish are interested in the actual spawning but just follow the spawners around eating the eggs.

After the fish mentioned had spawned they were put in an outdoor pond with other fantails. They spawned about a month later and many eggs were seen on the water plants supplied in some bunches anchored at the shallow part of the pond. The bunches with eggs were placed in a hatching tank and several fry hatched out. These were not in anywhere near the numbers of fry obtained from the fish when they spawned in a small tank, and so I consider that by using a breeding tank with two or three fish it is possible to get hundreds more fry from a spawning than if the fish had been left in the pond.

Although the bunches of plants for spawning may be supplied there is no certainty that the fish will spawn on these solely. During the early spring I placed a quantity of duckweed on the pond to shade out some of the light to discourage the formation of green algae. This is always a good plan as it will enable the water plants in the pond to get well growing after the winter's rest. They can then help to contain the formation of algae. The trouble with this duckweed is that after some time the roots get rather copious and can contain some blanket weed. This may form into a rather dense mass on the top of the water. Such a happening occurred in my pond and when the fantails

were spawning I noticed that they occasionally swam about near such masses of weed. After having taken the bunches of weed with eggs for hatching in a safe place I lifted a large bunch of the duck weed and placed it in another tank. I could see no eggs on this but thought it worth the experiment. No warmth was used in this tank nor aeration but a number of fry hatched out quite well. How many I do not yet know as there is still too much cover to the water to be able to see just how many fry are likely to be there. It is unwise to try to remove a mass of weed from a tank when the fry are very small as it would be very likely that many fry could be picked up with it.

In the usual spawning in a garden pond it is quite possible that eggs may be laid anywhere in the pond and have a very risky chance of hatching out. I know that during many spawnings in my pond over the past thirty years there have been very few fry mature in the pond from eggs which may have been laid other than on the bunches of weeds supplied. To date I have only seen one or two fry in the pond which hatched from eggs spread about during the spawning.

My experiences show quite positively that if one requires a large number of fry then it is better to use a tightly controlled method when only two or three fish are kept in a confined space for spawning. The chief essential in such a case is that the tank is large enough, not less than $24 \times 12 \times 12$ in. and that if the weather is warm, some aeration must be supplied. A sure way of getting many fertile eggs is to hand spawn the fish but this must be done with care and only with fish which are spawning.

Find the fish

by Doreen Thiel

- The first is in JET and also in JADE,
- The second is in PADDLE and also in WADE,
- The third is in CUP and also in SAUCER,
- The fourth is in KEATS but not in CHAUCER,
- The fifth is in DAM and also in DYKE,
- The sixth is in CYCLE and also in BIKE,
- The seventh is in WOMAN and also in MAN,
- The eighth is in POT and also in PAN,
- The ninth is in AUGUST but is not found in MAY,
- The tenth is in GREEN but not in GRAY,
- The last is found in YORK UNIVERSITY.

Solution on page 575

Our experts' answers to your queries

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

Coldwater queries answered by A. Boarder

Will you please advise me how to set up a tank 36 in. x 12 in. x 12 in., to be kept in a living room?

Your tank will hold 18 inches of fish, not including the tail. However, as the tank is to be in a living room it is probable that the water will be rather warm and the fish can grow faster than if the position was colder. You should therefore keep below this limit to enable the fish to grow. Use plants such as *Lagorhynchus major* and *Egeria densa*. There is no need to have more plants than this as they will soon grow and too many kinds in a tank usually means that some grow at the expense of others and a tank can soon get over-grown with too many plants. Start with a few common goldfish and add a shubunkin or two if all goes well. Do not try to stock with the maximum number of fish until the plants have grown well and the tank is well established.

I have noticed that a large frog is living in my pond. Is it likely to do any harm?

The frog is not likely to do any harm in your pond at this time of the year. It may remain in or around it all the winter. The only danger from frogs is in the early spring when they come to the ponds in large numbers to breed. A solitary male frog could grasp a fish but this is about a thousand to one chance and the fish attacked would probably be an ailing one or very slow moving one.

My coldwater tank gets very green. Would it help if I placed it in the window?

You would only make matters worse if you placed the tank in the window. Green Algae can only form in light conditions and the lighter the position of the tank the more likely is the water to green up. Either cut down the light reaching the tank or encourage more water plants to grow.

I have a pond 7 ft. x 3 ft. x 1 ft., and would like to know if it is possible to breed goldfish in it.

If so what size should the goldfish be and what other fish could I breed there?

The pond is large enough to breed goldfish. You would not require more than a couple of pairs of fish and you had better get some experience at breeding these before trying other kinds. Goldfish three inches long could breed and they can breed when less than a year old if they had been grown on well with plenty of space, warmth and the right feeding.

I have a pond 8 ft. x 3 ft. x 3 ft., and have noticed a number of goldfish fry in the water. I have no way of separating them and am wondering what will happen to them?

The number of fry which will survive depends on the amount of fine-leaved water plants in the pond. This is where the fry could hide from the other fish until they grow too large to be eaten. If the other occupants of the pond are only normal goldfish, of not more than about four-inch body length, it is probable that they will not be eaten once they get about an inch long over-all. Also, you can help by seeing that the larger fish have enough to eat. There must also be fine graded food for the fry or they may not grow quickly enough to get of a fair size before the winter. I have found that many young fish will survive in a pond if there is a good covering of water plants far better than if they were caught and put in an indoor tank.

I have a concrete pond and now wish to make another pond and join it to it. This one will be made with polythene sheeting. My problem is how can I make the join water-proof?

If you allow the sheeting to protrude well over the edge of the existing pond into the water there should be no fear of a leak between the two ponds. The top of the sheeting at the actual point of junction can be covered with a concrete slab or two to hide it.

I have a garden pond with a number of goldfish including many fry. I have noticed what I believe to be flukes on parts of their bodies. These parasites are about an eighth of an inch in diameter, flattish and transparent. Is there anything I can introduce into the pond to kill these pests?

The parasites are not flukes but fish lice, (*Argulus*). I know of nothing which you could put in the pond which would kill these pests without killing the fish as well. There is, in my opinion only one way to rid the fish of them and that is to catch them up and treat them separately. I once had an infestation of these by introducing a tench from the wild. I soon rid my fish of the lice by immersing them for a few minutes in a weak solution of Dettol. Use not more than a quarter teaspoonful to a gallon of water. Immerse the fish whilst held in a net for a few

minutes only, and remove the fish to fresh water; and if the fish turns over it must be removed at once. The amount of Dettol is open to variation according to the time the fish are immersed. I have used a solution as strong as a teaspoon to a gallon of water but in such a case the fish must be watched closely and taken out of the solution as soon as it shows signs of distress or turns over. A fish will soon recover when returned to fresh water. I found that the lice leave the fish as soon as it is immersed. It may be necessary to repeat the treatment after a week or so. The lice normally leave the fish to lay their eggs, either on stones or water plants. The young hatched ones swim around to find a host which they attach themselves to and suck their juices. Any wound left on a fish will be better for a few hours in a salt solution, about a tablespoon of sea salt to a gallon of water.

A few days ago my fish in the pond spawned. The eggs were laid on *Elodea* and *Anacharis* and they now seem to have disappeared. Where could they have gone as they were separated from the parent fish? Also there were two male shubunkins and two goldfish females. What were the chances of the spawn hatching?

The eggs could have hatched if laid and fertilised by any of the varieties of goldfish as they are all the same species, just a different variety. The eggs may have hatched by now but it is a fact that soon after they have been laid the fertile eggs become practically transparent when they are difficult to see in the water but the infertile ones turn a milky white and become covered with mildew. The eggs could have been eaten by any snails which were in the pond or by other pests such as the larvae of various insects.

Tropical queries answered

Is it a fact that harmful insects may be introduced into a tank when the rightful occupants are fed on live *Daphnia*?

Undesirable insects may be included in a catch of *Daphnia*. But if the collected or purchased crustaceans are placed in clean water in a glass jar or white-sided bowl, it should not be too difficult to detect and remove any creatures that should not be there or which are unknown to the aquarist.

I should appreciate some advice on the breeding of *Nannacara anomala*.

This fish is easily put off its parental duties if it or its aquarium are subjected to any disturbance. But if all goes well, the female will take great care of the eggs and young. It is necessary, however, to separate the pair after spawning is over as it is common for the fish to turn temperamental and fight. The youngsters may be fed on tiny white worms, brine shrimps, and the like.

I should be grateful for any information you can give me regarding the banjo catfish, the

scientific name of which I do not know.

The term banjo catfish is applied to species of the genus *Brucecephalus*, and more particularly, among aquarists, to *B. coracoideus* from the Amazon basin and thereabouts. The *Brucecephalidae* is characterised by a wide and depressed head, and a body which tapers away rather abruptly to a long tail. These catfish appear to be quite inoffensive and spend a lot of time pressed, as it were, into the compost. They are good scavengers and are most active at night, or rather after dark. They seldom grow much larger than about 4 to 5 in.

I am interested in the smaller barbs and would like to know the name of a good golden one that is easy to keep and would not be too difficult to breed in a two-foot aquarium.

Barbus gelius would suit you very well. This delightful little barb, popularly called the golden dwarf barb, comes from central and southern India and seldom exceeds a length of 1½ in. Although its basic colour is

Daphnia



Tropical queries continued



At first glance similar in colour to the neon fish, the cardinals show a red stripe extending the whole body length

gold it has some black blotches and irregular black bars on the sides. It will eat any food and will breed quite readily. It will stand a temperature down to the middle sixties (°F.) without suffering any harm.

Would it be possible to breed the dwarf gourami in a 16 in. × 8 in. × 10 in. tank?

The dwarf gourami will spawn in a 16 in. × 8 in. × 10 in. tank, but a larger one is needed for the fry which, in the initial stages of their lives, call for all the swimming space in clean, well-aerated water you can give them.

I have bought an underwater banana plant. Please give me some information as to this plant's successful cultivation in the tropical aquarium.

The roots of this plant, which is known to botanists as *Nymphoides aquatica*, should be buried in a compost of coarse sand or fine grit enriched with some clay. If the plant is without roots, then it is advisable to cover the banana-like tubers with compost, where root-formation will soon take place. Small plants and those without much in the way of roots and foliage should be started in about 4 to 6 in. of water. Plenty of bright top light is necessary, winter and summer alike, and a temperature of about 75°F. (24°C.) is as good as any.

I am a beginner in this fascinating hobby of tropical fishkeeping and would like to ask you a question. Every time—or so it seems—one of my two-spot gouramis takes in air, it expels it again with a sort of cracking sound. Is this a sign of disease or some deformity of the gills?

So long as your gourami looks in good colour and is swimming normally, do not worry. Gouramis often eject bubbles of air through the gills after taking it in at the surface. This release of air is often accompanied by grating or cracking sounds.

I have a flat concrete roof over a brick outhouse. If I run some plastic guttering to carry rainwater from this roof into a butt would this be safe to use in my aquariums?

Provided the concrete is well-weathered, that is to say has been exposed to the action of wind and rain for a long time, all should be well. But furnish the container with a moveable cover, with a hole in it to take the down-spout, to prevent birds and gusts of wind depositing anything in it likely to pollute the water.

How does one sex and spawn the cardinal tetra?

As the sexes of this fish look alike one has to wait until they have attained a fair size and have been brought into breeding condition. This is best achieved by paying special attention to the fish's diet, temperature, and quality of the water, which should be soft and peaty-acid, with a pH of about 6.5. When the fish are ready for breeding the female will show a greater fullness in the abdomen and a more rounded breast than the male. A layer of soaked peat on the bottom of the aquarium, combined with some feathery-leaved plant or higher algae, will help to safeguard the eggs from the egg-eating parents. As will be readily realised, the fish must be removed from the tank as soon as spawning is over. The eggs should be incubated in a soft light. The fry are free-swimming in about five days. A temperature of about 80°F. (26°C.) is advised. But be all this as it may, the fact remains that the cardinal tetra is one of the most difficult fishes to breed. In this respect it resembles the similar-looking neon tetra.

What are the requirements in food, temperature, water chemistry and tank space for the bleeding heart tetra (*Hypheosbrycon rubro-stigma*)?

The bleeding heart tetra is an adaptable species and ordinarily does very well in any well cared for aquarium. It takes live and dried

foods freely. As it grows to about 3 in. plenty of swimming space in well-aerated water is recommended. In its larger sizes it is perhaps better to keep this tetra with fishes of about its own size.

As a novice fishkeeper I would like to know what the initials pH stand for and what is meant by pH of aquarium water.

The initials pH stand for potential Hydrogen. This in relation to water (and soil) refers to the degree of acidity or alkalinity inherent in these elements. The scale of figures associated with pH analysis has 7 as the neutral point. Figures below 7 indicate progressive acidity; figures

above, progressive alkalinity. In general plants and fishes flourish best in a living medium that is neither too acid nor too alkaline. In short, a range of from about 6.5 to 7.5. Most dealers sell kits for testing the pH of aquarium water.

Recently I bought some coral to decorate my tropical tank. But a few days ago a friend with years of experience as a fishkeeper behind him alarmed me by saying that coral in a fish tank always gives more trouble than it is worth. Is this true?

The trouble with coral is that it tends to alkalinify and harden aquarium water. Now, while some fishes are

most accommodating as to the quality (chemistry) of their aquarium water, there are others that are more faddy and will only flourish in water that is on the soft side (or of negligible hardness) and neutral to acid (in terms of pH) at that. However, we do not think that a few small pieces of coral in a fair-sized freshwater tropical aquarium would do any harm, provided no extra-sensitive fishes such as *Symphysodon* spp. are present. But one final word of warning. Coral studded with points should be excluded from a tank stocked with excitable or nervous fishes. Corals are quite safe and, indeed, are the most suitable decoration for a marine tank.

Ivy leaf *Cryptocoryne*

THE USE OF POPULAR names for fish and plants by aquarists may be convenient but sometimes can be very confusing. An example is the 'Ivy leaf *cryptocoryne*' which has been advertised in *The Aquarist*. This plant does not appear to be a *Cryptocoryne* at all, but a species of *Syngonium*, possibly *S. podophyllum*. The misleading aspect of the name 'Ivy leaf *cryptocoryne*' is that if the plant is grown under conditions suitable

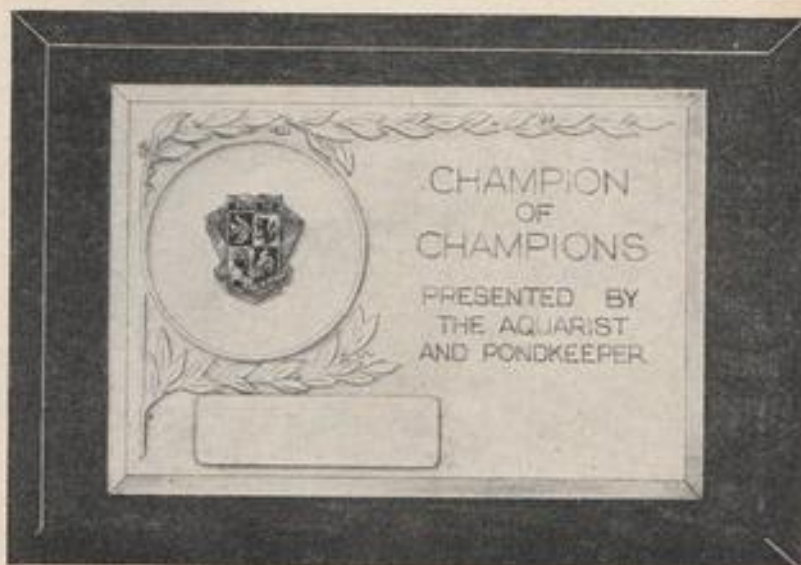
for true *Cryptocorynes* (i.e., totally submerged), the plant may die.

Although the genera *Cryptocoryne* and *Syngonium* both belong to the family *Araceae*, *Cryptocoryne* is native to tropical S.E. Asia whereas *Syngonium* is confined to tropical S. and Central America.

Syngonium podophyllum is easy to grow if it is potted and placed in a warm, humid atmosphere, as found

in a fish house. If treated as a totally aquatic plant, it will almost certainly die, a fact which must have been discovered by many aquarists. Under the right conditions a great number of leaves and runners are produced, and so propagation can be achieved. Growth is rapid and an attractive plant soon results. *S. podophyllum* is usually obtainable from florists as it can be grown as a house plant.

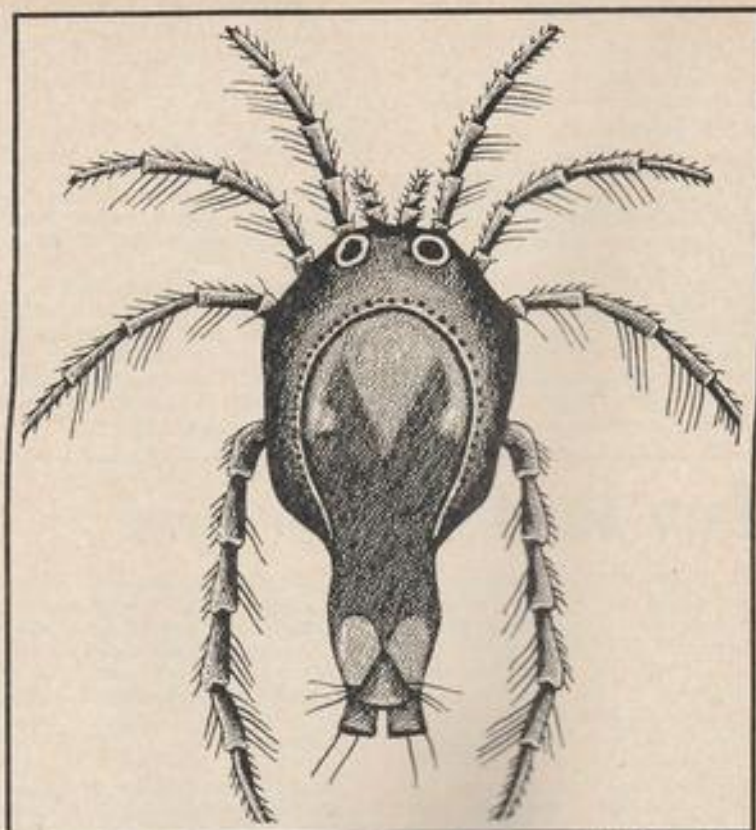
An oxydised silver-plated plaque, mounted on a hand-made Indian Rosewood back, will be awarded to the winner of the 'Champion of Champions' contest at the B.A.F. Festival (see page 555)



Waterlife pests and friends

Water-mites
(*Hydracarina*)

by Bill Simms



THERE ARE VERY many kinds of water-mites and the one shown here is of the *Arrhenurus* species. Like most other kinds of mites, these are small, being only one or so millimetres long, and only a very few experts can identify them with certainty.

All mites, however, are recognisable as such by having four pairs of legs and an unsegmented body, even though the legs may be long or short, with or without swimming hairs, they all follow roughly the same pattern. The bodies, also, are similar, being globular and distended in some form of ovoid or sphere.

Being predators, water-mites feed

on the juices of all kinds of tiny water creatures including daphnia, cyclops, insect larvae, and other soft-skinned creatures. Like other types of mites, those in the water fasten onto their prey, pierce the skin with their mandibles, and then suck out the juices.

Although some water-mites live and swim freely, others are parasites and spend a large part of their time fastened onto their selected host. Others swim to the surface to fasten onto flying insects as they settle on the water. If noticed, they should be removed from any aquarium.

Outsize tropical

THE LONDON ZOO has a tropical freshwater fish that might well have established a record for growth. It is an Arapaima from South America, and was obtained by the Zoo in 1962 from Buenos Aires. At that time it was about eighteen inches in length; to-day it is nearly six feet long, a phenomenal rate of growth.

A handsome fish of dark green colouring with a striped tail, the Arapaima has an exceptionally hearty appetite, which Zoo officials think may account for its abnormal growth.

Breeding livebearers

by A. W. Skinner

THERE ARE QUITE a lot of articles written on breeding the various egg-laying fish but not so much appears about livebearers. Maybe it is because most people feel there is not such a sense of achievement about this as quite often the fish will produce whether you wish it or not. While this is true, there is still a lot of work involved in breeding good livebearers; if you look round today most of the home-bred fish are very small when mature and also a lot of the Swordtails and Platies are very cross-bred. The following ideas in my opinion will produce good fish and over the past few years I have found them to work in practise.

I will leave Guppies to the experts and explain how we breed the Swords, Platies and Mollies. First, we try to obtain six young fish from one source and six from another—if possible from people who are breeding in different parts of the country. These fish are then grown up in two different tanks; we try to grow them as quickly as possible by giving as much variety of food as we can. If they can be fed on a good variety about four times per day they will soon grow into mature fish (e.g. for feeding: daphnia, white worm, oxheart, liver, good quality dry food, freeze-dried foods, spinach, peas, etc.) I would like to say that livebearers especially require some green foods at least twice a week.

When they become sexable, split the fish into males and females, still keeping the two sources separate. As soon as you are sure that all fish have sexed up, introduce the best males from source one to the best females from source two and again females from source one to males from source two. You are then starting off with two lots of unrelated stock. We find that when the fish become gravid with the Platies

and Swordtails it is best to put one female into a small tank, let her produce her brood and then move her back to the tank she was taken from. If plenty of plant is put into the small tank with her and she is well fed she does not eat her babies and so can be left in peace until you feel she has finished producing.

With Mollies it seems advisable to let them stay in the tank with the rest of the fish as when we have moved a gravid Molly the female had had her youngsters then died a few days after going back to the adult tank. Mollies will eat the babies, however, and the only solution is to keep the tank well covered with floating plant and check the tank several times per day when the females look gravid. When you do see the baby Mollies, get them out as quickly as possible.

Once the baby livebearers are swimming around in the small tank

they can immediately be moved into larger tanks for growing on. We usually float the small tank in the larger one for half an hour and then let the babies swim out. They can be fed straight away on brine shrimp, micro worm, sifted daphnia and fine dry foods. Within a week or two they will be big enough to eat the normal foods. If this method is followed it should be alright to interbreed for one generation; then, if it is at all possible, bring in new blood as often as you can. What I like to do once I have a good strain going is to keep my females and buy in one or two young males. We usually have two males and about six females in the adult tanks and this gives a continuous supply of youngsters. Although it is more work than if you just go out and get a pair of fish, the final result will not only give great satisfaction to the breeder but will benefit the tropical fish hobby in general.

Pair of red swordtails (male, left)



Improvisations

by R. C. Mills

ONCE THE COMMUNITY tank has established a foothold in the house, it is not long before, in the fashion of aquatic plants, small tanks seem to develop like runners from the parent tank. Usually these soon grow into adult tanks, and room has to be made elsewhere for them (or else!). A shed or greenhouse or other spare space is then taken over and it is in these rooms before they become fully fledged fish-houses with all the associated efficiency (?) one expects to find in them, that a box of bits usually lives; and from this treasure trove one can press into service anything that is remotely useful.

Brine Shrimp hatcher

During last winter I wanted to raise some brine shrimp for some youngsters and I was looking for a scheme that would not necessitate jars, bowls or any complicated hatchery. Upon rummaging around in my box of bits, I came across an old outside filter (which I'd forgotten I had), and an idea began to form in my mind.

I hung the filter on the tank, but on the inside, and filled it up with the brine solution, added a pinch of eggs and an airstone. The brine solution, being immersed in the tank, is kept at the same temperature as the tank which is the optimum for hatching, and the airstone keeps the eggs from settling and increases the percentage of shrimps hatched. When a reasonable number of shrimps have hatched (with this method the period of time can be as short as twenty-four hours) the airstone is removed and the empty eggshells are left to settle. The hatched shrimps, meanwhile, swim up towards the lights over the tank and can be easily netted. A further pinch of eggs is added and the airstone replaced. One precaution to be taken if thought necessary: a cover should be placed over the filter as the spray thrown up by the airstone (being salt) can corrode the tank hood.

Infusoria Converter

The box of bits yielded up another piece of redundant equipment which I utilised in this way. I had found a worm feeder and thought that it could help provide a supply of infusoria and green water but first I had to find the rubber sucker for it!

Some bruised lettuce leaves and bits of hay were crammed into the feeder (which was the double-sided hinged type) and the feeder was put into the tank in the usual way. The vegetable matter soon decomposes, and a cloud of infusoria gathers around the feeder and it is not long before the fry do too. If *daphnia* are added at a later date they will live on the infusoria and green water and probably breed, so providing a fairly continuous source of food.

Sub-gravel filter pipes

I found that I was having varying success with sub-gravel filters and on unearthing one during a hunt for something entirely different, decided that it would be nice to use it for something else if only I could think what! One idea I had been toying with was to use it for filling up tanks when setting up so as not to disturb the gravel arrangements unduly. This, I felt, would be most useful at furnished aquaria competitions; the idea was to connect a funnel to the airlift pipe, pour the water into the funnel and it would rise gently up through the gravel and when the tank was full the airlift pipe could be disconnected from the sub-gravel grid by a gentle twisting movement. However, upon trying the idea, and wasting valuable time in the process, I decided that for the scheme to work the holes in the pipes would need to be enlarged; so that idea has been shelved for the time being, but I may try it again some day.

I was determined to find a use for the pipes, however, and they finally helped me to solve another filtration problem. In one of my tanks I use a

polythene sponge type filter and for some time had been perturbed that only one part of the water seemed to be continuously filtered; this being due to the fact that the outlet of the filter was immediately above the sponge and so a very short circuit was being set up. Here then was a use for those pipes.

By means of a short length of rubber tube I joined on the pipes to the filter outlet and carried the filtered water to the opposite corner of the tank. A little water escapes from the holes in the pipes, but the air bubbles carry most to the end of the pipe, and of course if the end was sealed, filtered water would be distributed over the whole surface of the tank.

Feeding Rings

If your box of bits contains, like mine, odd lengths of air tubing, don't despair of ever using it. Select a foot length or so of it, and join it end to end, either by brute force or by means of a short piece of smaller bore tubing. Seal the joint with aquarium sealer and you have an inexpensive feeding ring. Of course, you've still got to find a rubber sucker to fix it to the tank.

Airstones

Occasionally I venture further afield than my box for useful items, and on a recent visit to London's Portobello Road Market I bought a number of grinding stones. These were cylindrical in shape, about 1 in. long, $\frac{1}{2}$ in. in diameter, and were drilled through ready for use on a grinder. "Oh yes," you will be asking, "whatever for?" which is exactly the same question I had to answer when I got home. "Er well," I said, thinking quickly, "I'm going to make er . . . airstones out of them" hoping very hard that they would at least be porous enough to let air through!

A piece of air tubing was a tight fit into one side of the stone, and a very short piece of rubber plug from a tubeless tyre repair outfit sealed the other side. An air pump was connected and my theory put to the test; fortunately the stone was extremely porous and hardly any air pressure was needed to give a fine stream of very welcome bubbles.

The moral of all this is "when in doubt, don't throw it out," you never know when you might need it, even if it's not for the purpose you originally got it.

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THE MARBLED NEWT (*Triturus m. marmoratus*) is a large, handsome species growing to a length of about 6½ in. in the case of females (a little shorter in males) and is found throughout Spain, Portugal and Southern France. The coloration is really quite striking, consisting of bright green marbling on a black background. Add to this the male's high, straight-edged crest (interrupted at the base of the tail) with black and cream vertical stripes and you have a reasonable picture of the Marbled Newt in the breeding season—surely the most resplendent of the European newts. The underside—not usually seen—is a dark grey-brown colour with a sparse peppering of white spots.

A pair soon settles down well in an 18-in. tank provided with a means to leave the water and planted out with such varieties as Starwort (*Callitriche* spp.), Canadian Pond-weed (*Elodea canadensis*) and Water Forget-me-not (*Myosotis palustris*). The last mentioned is particularly favoured for egg-laying because of the greater width of the leaf which makes the female's task considerably easier and quicker. Indeed, so popular is this plant that the leaf takes on an appearance reminiscent of a concertina with as many as six eggs being individually folded into their own "envelopes" down the leaf. This process is accomplished by using the hind feet to fold over the leaf and into this the egg is laid.

Egg-laying is preceded by the courtship which will only occur if the pair has hibernated during the previous winter and has then been content in their summertime aquatic residence. This may be assured by giving the newts an adequate and varied diet including such items as earthworms, anglers' maggots, frog tadpoles, raw meat (liver seems to be especially popular) and even the occasional unwanted Guppy seems to be welcomed. The lively display of the male is a most fascinating spectacle and is one which may be seen quite frequently during the spring and early summer for he continues to display to the female intermittently (though with no result) after she has mated. This display consists of the male standing at right angles to the female and directly in front of her. The tail is then curved at the mid-point towards the female and is gently waved in a "beckoning" motion

THE JUNIOR AQUARIST

The Marbled Newt

by Peter Burns

showing off the pale stripe on the side of the tail to full advantage. Occasionally the male turns on his side—supported only by his snout and the tip of his tail—thus forming an arc in an attempt to "impress" the female by revealing, in full, the bright dorsal markings and, of course, the crest. When in this position the male suddenly lashes his tail (rather like a whip being cracked) to jerk him back onto his feet and into his original position. He then repeats the process again and again, sometimes more vigorously than others, for as long as twenty or thirty minutes. At this time, either the female moves away (which sometimes results in the male's nudging her sides) or the male drops a small "packet" of sperms (herpetologists call it a spermatophore) which the female then picks up in her cloaca. Egg-laying commences one or two weeks afterwards.

The eggs of the Marbled Newt are roughly oval (being approximately 5 mm in length and 3 mm in width) and each contains a white, spherical embryo. As many as 450 eggs may be laid over a period of two or three months on the basis of a few and often. To prevent the adults eating the resulting tadpoles it seems best to remove the "egg-infested" plants two or three times per week to a separate aquarium to allow them to hatch safely, replacing those plants taken with fresh ones. Hatching generally takes place approximately three weeks after laying. At first the youngsters lie helplessly on the bottom or cling to the plants or aquarium glass using special organs (the balancers) in the form of two drooping filaments behind the eyes. They seem to eat nothing until the intestinal tract is clearly seen to be developed. At this stage large quantities of *Daphnia* should be added to their aquarium and these will be eagerly snapped up resulting in rapid growth. Because the eggs are laid over a considerable period, some tadpoles are a good deal bigger than others so it is advisable to split the youngsters into two or more aquaria according to size; it can be most disconcerting to see one of them disappearing down the gullet of one of its bigger brothers! These tanks should be thickly planted with Water Milfoil (*Myriophyllum spicatum*) and Water Crowfoot (*Ranunculus aquatilis*) since the newt tadpoles have a habit of nosing anything and everything and



The marbled newt

Photo by Lionel E. Day



if it moves, they snap at it—including toes, legs and tails of other tadpoles with obvious damage; so, by planting densely, this danger is lessened.

After about four months of this larval and dangerous existence, the large feathery gills behind the head are absorbed as so are the fins along the top, the back and along the tail; the body coloration becomes darker and then assumes the adult patterning; it breathes air and its metamorphosis is completed and it leaves the water.

As this happens the youngsters should be placed in a container holding smooth, moist earth with half a dozen pieces of bark, flower pot, etc., as hiding places—a small dish of water is unnecessary so long as the cage is kept humid. A shallow, wooden box, lined with a plastic bag (cut to measure) and covered with a piece of glass makes an ideal home for the "newtlets". They present no difficulty in feeding since they readily seize small pieces of earthworm or clots of

Tubifex placed in front of them. Their appetite and growth are amazing so that if they are kept active and feeding through their first winter, within a year some of them will reach a length of 4 in. and males will exhibit the beginnings of a crest in the form of a low dorsal ridge (as opposed to the orange stripe in the females). Normally, however, maturity is attained by the third year.

Hibernation is essential to breeding and may be accomplished by not feeding the animals for two weeks and then placing them in a container such as a cubical biscuit tin into which has been placed first a layer of earth and then dead leaves—all topped by a layer of moss for insulation. Replace the lid and put the whole in a garage or cellar where the temperature is low but not below freezing-point. Under these conditions the newts should pass the winter successfully and re-appear five months later none the worse.

The obliging Silver Tipped Tetra

by R. C. Mills

RECENTLY I HAD occasion to buy a number of fish for a furnished aquaria competition and I had decided that a shoal of tetras would make a change from the tiger barbs, angels, mollies, etc., that usually inhabit such set-ups. For this reason I also counted out neons and cardinals. My local dealer must have had his spies out, for the next time I called in there was a tank of Silver Tips; just what I needed. Another reason for getting tetras as opposed to other species was that I use rain water and peat in most tanks, and I thought that this would suit them better and also improve my chances of spawning them should the occasion arise.

*Hemigrammus nanus** is an attractive fish which grows to about 1½ in. in length; the body colour is golden brown with silvery flanks. A black bar extends along the lateral line from below the dorsal fin into the central rays of the caudal fin; the fins are golden and are tipped with pure white. There are two golden patches in the caudal fin, one each side of the black bar. Naturally enough, the males have more intensified colours and this is much more evident, of course, at breeding times but this difference can be seen easily if two fish are compared in a jar and viewed in daylight.

On placing the fish in a planted tank, each male stakes out a claim on a particular thicket and is on constant guard against other male trespassers and various skirmishes are usually taking place quite often. A note of warning perhaps: it is possible that if too many are kept together this quarrelling may result in fin-damage; indeed, I found that within a week some of my fish had lost tails but thanks to rapid thinning out these have now regrown. After settling down again some of the more colour-

ful specimens were chasing the more drab members in a rather different manner than just driving off trespassers. Thereupon I decided to separate some males and females and attempt to spawn them. Half a dozen of each sex were put into separate quarters for a week or two and a spawning tank prepared.

A 24 in. × 12 in. × 12 in. tank was filled with rain water and a large bunch of anacharis, about a dozen stems, was weighted down at one end. The temperature was set at 78–80°F., and the tank was left to settle down over the period of conditioning the brood fish. I usually adopt this routine because I have often found that on putting in a pair of fish I suddenly notice a colony of snails sitting waiting for the eggs! I therefore leave the spawning tank for a week for things to appear.

By this time I had a number of conditioned fish (the mosquito larvae had appeared in my water but at just the right time), and I decided to put a pair in the tank in the morning. I was on holiday at the time so I was able to keep a watch on what went on.

After a few minutes, during which the fish found their bearings, the male lost no time in renewing his acquaintance with the female and was soon chasing her all over the tank but finally both ended up in the plants and assumed a side by side attitude, heads up almost vertically and trembled violently with eggs being expelled and fertilised immediately. After an hour or so the female hid in the plants and took no further part or interest in the proceedings; the male kept on swimming round the tank looking for her to no avail but neither, to my surprise, seemed to be taking an unhealthy

interest in the newly laid eggs. They were removed at this stage and placed in another tank to recuperate.

As I was not sure how long the hatching period would take (2-3 days plus three or more to reach the free swimming stage seemed to be a fair guess), I decided to try another pair the next day and so get a few more eggs and a larger number of fry to start off with. The next pair followed the same routine but because I was on holiday and the family insisted that we went out somewhere, I forgot to remove the adults and by the time I remembered, I assumed the damage had been done and left them in the tank, intending to try later with another pair. A week passed and I was looking in the tank when I saw to my surprise a few fry amongst the leaves of the plants, and also a number of much bigger fry! Allowing for the fact that in every hatching there are fast and slow growers, the bigger were so much larger that they must have come from the first pair's spawning. Out came the adults pretty smartly and the fry were fed on the usual initial foods, liquid food, fine powdered food and brine shrimp. They are now growing quite quickly and I still can't understand why they were not eaten before as anything edible was snapped up extremely rapidly by the parents.

On the whole then, a very obliging fish, a colourful addition to the collection, amusing in the way it behaves with its territory guarding antics. The only possible drawback is its suspected fin nipping although I never actually saw the culprit in action, only the results. One final piece of advice, if you have to catch some of these fish and they hide in the plants, to spot them just look for those white tips on the fins: they just can't keep them still.

*Note.—There seems to be a little confusion over the scientific name of this fish. Sterba favours *Hemigrammus nanus*, as does Innes, but McInerney comes down on the side of *Hasemania marginata*, a choice that Innes considers wrong; add to this the fact that this fish either have an adipose fin or not, and the mystery deepens further.

Stocking the Community Tank

by M. J. Parry

THE TERM "COMMUNITY TANK" is a much generalised one, and is interpreted in many different ways by individual aquarists. To some it represents a motley selection of fishes, without any regard being paid to diversities in geographical locations, whilst to others it represents an aquarium stocked with species of fish within a certain range of habitat, or within a certain family or genus. The former is, undoubtedly, the most popular and widely kept, so it is to this subject that I intend to devote this article.

The general school of thought on "community" aquariums is that they should be stocked with three different "swimming layers" of fish, viz. "surface swimmers", "middle swimmers" and those which spend most or all of their time scouring the aquarium bottom.

Surface swimmers are best represented by members of the danio family, which includes the well-known and highly popular Zebra fish (*Brachydanio rerio*) and the Spotted

pairs of barbels (somewhat indistinct) are present. They are strong, active and graceful fishes and continually on the move. Consideration may also be given to the White Cloud Mountain Minnow (*Tamichthys albomaculata*) a native of the White Cloud Mountains of Canton, China. When young they are often mistaken for the equally attractive Neon Tetra (*Hyphessobrycon innes*), with its dazzling streak of electric bluish-green passing from eye to tail. This line is bordered from below by a reddish coloration, whilst above may be found tints of yellow.

Hatchet or "Freshwater Flying Fish" are other alternatives, and are popularly represented in captivity by two species, *Carnegiella strigata* (Marbled Hatchet Fish) and *Gasteropelecus levis* (Silver Hatchet Fish). They have very deep, keel-like, compressed bodies, with the ability to leap from the water when disturbed. It is a wise precaution, therefore, to ensure that a cover glass should be put to use. Little is known of the family's breeding habits, which should provide a subject of experiment for the adventurous breeder.

The classification "middle-swimming fish" affords much greater scope for selection, as it includes all common livebearers, fishes of the *Rasbora* genus, and almost every member of the *Anabantid* Barb and Characin families.

From the first group the Guppy (*Lebistes reticulatus*) needs little introduction. Indeed, throughout the country, groups have been formed devoting themselves exclusively to the study of this fascinating species. Its common name is derived from that of its founder, Dr. R. L. Guppy, who collected them on a large scale in Trinidad around 1859. It has, since that time, been brought into many countries as an anti-malarial measure, including Barbados, the Leeward Islands, Venezuela and North Brazil.

The Guppy is a prolific breeder, even in confined spaces, young being produced every four to six weeks. In addition it is a very active, peaceful fish, seldom contracting disease. The female is generally a plain-greyish colour, totally opposite to the male whose body coloration reflects every colour of the rainbow.



Zebra danios
(*Brachydanio rerio*)

Danio (*Brachydanio nigrofasciatus*). All are natives of Burma, parts of India, the Malay Peninsula and Sumatra, where they inhabit standing and fast-flowing waters, with high oxygen content. They are exclusively shoaling species, with slim bodies and upward-turning mouths. Two



Guppies

One of the most popular groups amongst livebearing fish are members of the *Molliesia* family, more commonly known as "Mollies". Four species are commonly available, *Molliesia latipinna*, *M. sphenops*, *M. veifera* and *M. latipunctata*. To keep Mollies in good health a good deal of soft vegetable food is necessary. This most often being provided by the algae which grows on the tank sides. During winter, however, this may need to be supplemented by boiled spinach, lettuce, etc. Alternatively, wheatgerm in the form of Bemax is relished by this family, as by all livebearers.

Two types of Platies can be recommended for the community tank, *Xiphophorus maculatus* and *X. variatus*, the former being the most widely kept and the best known. The *Maculatus* comes in many colour varieties, its easy hybridisation

resulting in many new strains. Females each a maximum length of 2½ inches, being much deeper bodied than the male which reaches approximately 2 inches.

The *Platy variatus* has once again, several variations in colour. The tail fin usually being of red or orange, as is the throat. The body is generally greyish in colour, with purple spots or streaks in the ventral region. It reaches the same size as its better known cousin. As all Platys will interbreed one should never mix the sexes of different colour varieties in the same aquarium.

The final common livebearer, the Swordtail (*Xiphophorus helleri*) is probably one of the hardiest and most spectacular of fish to be found in the home aquaria. The males, in particular, are the most attractive, with their long, pointed swords and large dorsal fin.

Nine colour varieties are widely available: the green, red, albino, golden, black, tuxedo, red-eyed red, wagtail and Berlin. In the green the body should be of a light green colour, reflecting turquoise, with a vivid red line running from the eye into the caudal fin. The sword extension is light orange, edged with black. In reds, the entire body should be an intense scarlet, the sword being yellow, edged with black. In the Berlin Swordtail, two colour variations are found, red and green. In the former the upper half of the body is intense scarlet, and the lower half black. The sword is red edged with black. Red and green Wagtail Swordtails have similar markings to comparable varieties of Platies, whilst Albinos have pink eyes and no pigmentation.

The original green Swordtail from which all colour varieties have



Mollenisia velifera

resulted, due to hybridisation, is native to the lowland streams of the Atlantic drainage from Southern Mexico to Guatemala. The fish reaches a maximum size of 4½ inches in the female, and three inches for the male, minus the sword.

From the Rasbora family one outstanding species springs to mind—the Harlequin fish (*Rasbora tetramorpha*), just one of the many community fishes indigenous to the Malay Peninsula, Sumatra and Thailand. It would be true to state that until recent years the Harlequin, and the Scissortail (*Rasbora trilineatus*) were the only members of the Rasbora genus commonly available in this country. Times have changed, however, as is indicated in a list recently published by a well-known aquatic dealer, with the result that we now have many more species of the family available to grace our aquariums—

Platy varieties (*Xiphophorus maculatus*)



Firetails, Redline Rasboras, Green Eyed Rasboras, Metallic Rasboras, Dwarf Rasboras and Elegant Rasboras.

The genus *Anabantidae* offers much selection to the tropical fish enthusiast in his searching of species with which to stock the community tank. The family is represented by many popular species, ranging in size from the dainty and petite dwarf Gourami (*Colsa lalia*) to the Giant Gourami (*Osphronemus gorami*) which attains a length of some 24 inches. The genus is so extensive in number that it would be impossible in the limited space available to name but a quarter of them! Suffice to say, however, that almost every species may be regarded as a "community fish", provided that the size they ultimately reach is taken into consideration when originally adding them to the community aquarium. There are certain notable exceptions, examples being the Paradise Fish (*Macropodus spp*) a most spiteful animal, and the Climbing Perch (*Anabas testudineus*).

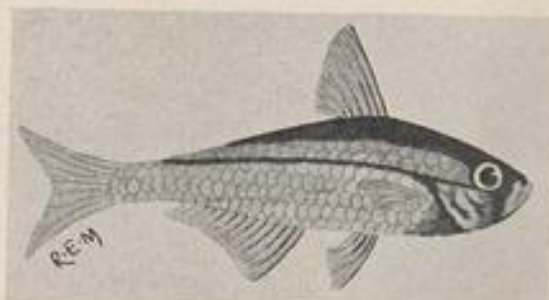
The Anabantid family is unique in that most of its members possess an auxiliary breathing organ, known as the "labyrinth", situated within the gill cavity, in which air can be stored. Such an organ enables them to utilize atmospheric oxygen in addition to that absorbed through the gills in the normal respiratory process common to all fish, tropical or cold-water, freshwater or marine.

Members of the Barb (*Puntius*) and Characin (*Characidae*) families have long been popular with aquarists, and it is not particularly difficult to see why—a great selection of easily acquired and attractive fish, reasonably priced, and with every opportunity available for their successful breeding. In the Barb family those worthy of immediate mention are the Nigger Barb (*Puntius nigrofasciatus*), the Checker Barb (*P. oligolepis*), Cumming's Barb (*P. cumingi*), the Golden Barb (*P. schuberti*) and the Tiger Barb (*P. tetrazona*), and in the Characin family, the Cardinal Tetra (*Cheirodon axelrodi*), the Neon Tetra (*Hyphessobrycon innesi*), the X-Ray Fish (*Pristella riddlei*), the Beacon (*Hemigrammus ocellifer*), the Penguin Fish (*Thayeria obliquana*) and the Flame Fish (*Hyphessobrycon flammeus*).

The group of fishes known broadly as "catfish" contain some of the most interesting, yet grotesque fish known



Speckled mollie
(*Mollenisia sphenops*)



Neon tetra

to the enthusiast, two in particular being outstanding examples of the diversity of aquatic life—the Glass Catfish *Kryptopterus bicirrhus*, from the East Indies, and the Upside-Down Catfish (*Synodontis nigriventris*) which originates from West Africa. The *Corydoras* variety of Catfish are the most popular of such fish, though ones that are greatly abused in the way of feeding. They are inexpensive, petite little fish, a constant source of amusement with their repeated darts to the surface of the water, for air. Seldom exceeding 3 inches in length, the *Corydoras* Catfish are exceptionally hardy fish, surviving for upwards of five years in the home aquarium. The sexes are distinguished by the smaller size of the male, and his longer and more painted dorsal and ventral fins. The Leopard Catfish (*Corydoras julii*) is probably the most popular of the species, closely followed by the Bronze Catfish (*C. aneus*) and the Mottled Catfish (*C. paleatus*). Alternative "scavengers" (bottom-feeders)

are members of the Loach family (*Cobitidae*), the most well-known being the Khuli Loach (*Acanthopthalmus ruhi*) an eel-like fish, which reaches a maximum length of around 4 inches. Its basic body coloration is yellowish in nature, with numerous black vertical bars to enhance its appearance. It is, unfortunately, mainly nocturnal in character and thus seldom seen during the daylight hours. Another outstanding species within the same family, though much different in shape is the Clown Loach (*Botia macrocephala*). It is, however, very susceptible to chills, and is, all in all, not a very easy fish to maintain in good condition.

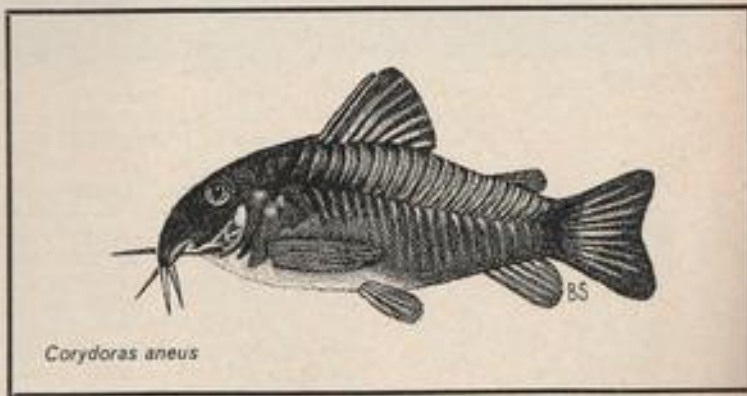
We have now, very basically covered the three main "swimming layers" of fishes that are suggested for the community aquarium. Three further species, however, are worthy of mention—the sucking "loaches" of the genera *Octocinclus gyrocheilus*, and *Plecostomus*. These fish live almost exclusively on the algae that grows on the tank sides and aquatic vegeta-



Nigger barbs

tion, and have been likened to "aquarium vacuum cleaners". They are the most harmless of specimens, and although some (particularly *Psectrogaster*), command a high price, they are well worth the money.

It has not been possible in the space of this article, to give anything more than just a basic insight into the many species available to the hobbyist in his stocking of the "community tank". I sincerely hope, however, that it might have assisted the beginners amongst us, with suggestions from which, with a little experiment, they might derive great pleasure.



Corydoras aneus

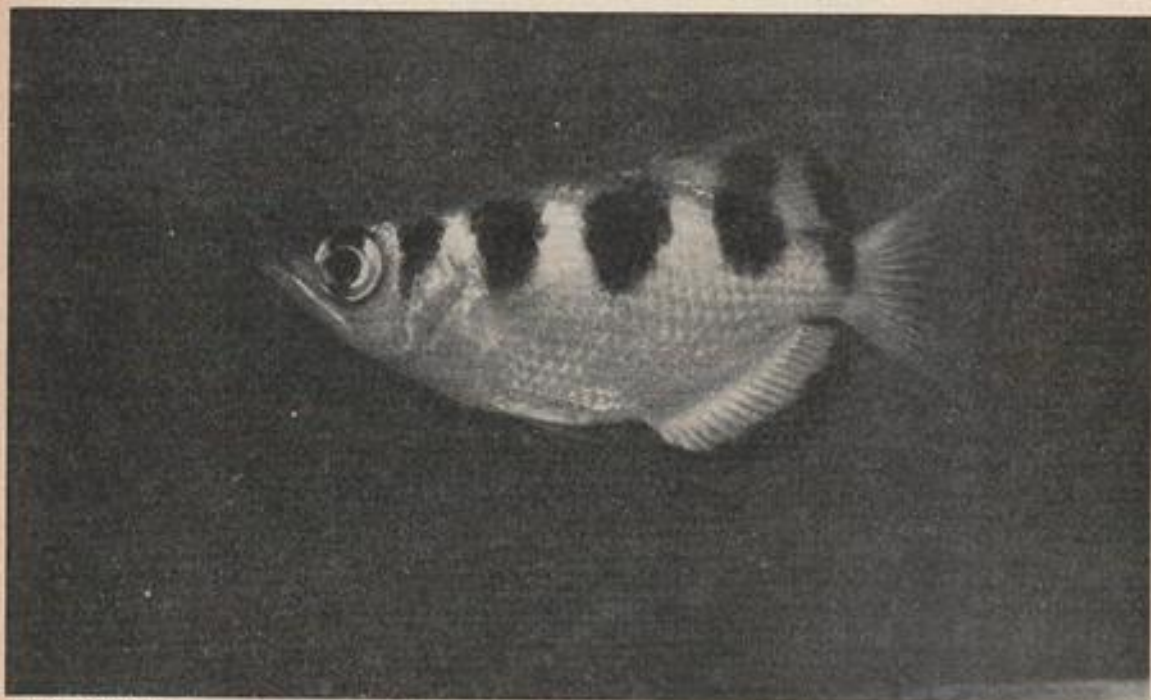
Readers are invited to express their views and opinions on subjects of interest to aquarists. The Editor reserves the right to shorten letters when considered necessary and is not responsible for the opinions expressed by correspondents.

*Address letters to The Editor
The Aquarist.*

**THE BUTTS, HALF ACRE,
BRENTFORD, MIDDLESEX.**

The Archer Fishes

by Christopher Heald



Toxotes jaculator

THE ARCHER FISHES are a small family of fishes known as the *Toxotidae* of which there are five species. They inhabit the seas around Java, and they obtain a length of about 6 inches. The colour of the archer fish is usually silvery-grey with six black bars running vertically down the body giving the fish a very striking appearance. They will eat live food, a particular favourite being mealworms which are knocked into the water by shooting drops of water to a distance of 3 or 4 feet with great accuracy. Many types of insects are taken, and in winter when they are very scarce, a good idea is to place a tray on the surface of the water containing the

crysalids of the house fly so that they provide a constant supply of food as the flies hatch. The crysalids can be bought for a few pence at most fishing tackle shops in both summer and winter.

A temperature of 72-75 degrees usually proves satisfactory. As it inhabits brackish water in its natural environment a mixture of salt water is recommended.

Unfortunately nothing is yet known of either sex determination or the breeding habits of the archer fish, but it gets along well with both its own and other species and is thus an excellent addition to any community tank.

The Potamogetons

by Philip Swindells

THE POTAMOGETONS ARE A GENUS of submerged aquatic plants of great value to both the aquarist and pond-keeper. About ninety species, and innumerable varieties and hybrids have been recorded by botanists of which some twenty-five or thirty occur in the British Isles. Some of these, however, are of little consequence to the hobbyist, for they differ in very minor ways and often vary according to the conditions under which they are growing, making positive identification very difficult.

For practical purposes the genus has been split into two sub-tribes; the true Potamogetons and the Coleogeton. The former consists of those species sometimes producing floating leaves and which are wind pollinated, the latter containing those completely submerged and water pollinated. Of the Coleogeton only two are at all common as pond plants, these are the Slender Leaved Pondweed (*P. filiformis*) and the Fennel Leaved Pondweed (*P. pectinatus*). Both at first glance seem very much alike, but

closer examination will reveal that the foliage of the latter is much more branched and the fruit, although larger, is not so prominently beaked. Once established *P. pectinatus* can become invasive, crowding out other less vigorous and more choice aquatics; so *P. filiformis* should be grown in preference wherever possible.

The most familiar of the true Potamogetons must surely be the Curled Pondweed (*P. crispus*), with its handsome serrated and undulating bronze-green, translucent leaves it makes a wonderful addition to any pool or aquarium. Its flowers are not altogether insignificant either, being held above the water on short stout spikes, they are of a crimson colour with interiors of creamy-white. Several species somewhat resembling the Curled Pondweed, but lacking the attractive crinkled margins to the leaves are often seen: notably the Sharp Leaved Pondweed (*P. acutifolius*), Flat-stalked Pondweed (*P. friessii*), Grass Wrack Pondweed (*P. compressus*) and Grassy Pondweed (*P. obtusifolius*) all of which seem equally at home in pool or aquarium when shaded from brilliant sunlight. Both *P. compressus* and *P. acutifolius* are recognisable from the other two by their distinctive flattened leaf stems, the latter being further distinguished by its large toothed greenish-brown fruits. *P. friessii* produces numerous short grassy branches from the axils of the mature leaves, which always leaves it open to confusion with the Small Pondweed (*P. berchtoldii*) a common inhabitant of our streams and ditches. Few more plants are more useful, yet so sadly neglected as *P. berchtoldii*, as it tolerates acid or alkaline water and will grow profusely in either sun or shade.

Several of the larger species of Potamogeton produce handsome floating leaves, and some of these if kept within bounds will make a useful addition to the outdoor pool. The Bog Pondweed (*P. polygonifolius*) and Various Leaved Pondweed (*P. gramineus*) are the most amenable kinds. The former producing quaint ellip-

tical floating leaves and dense spikes of greenish fruits, whereas the latter has almost oblong floating leaves and exceedingly attractive broad, lanceolate submerged foliage. Unfortunately *P. polygonifolius* will only grow in acid water, so if you are inflicted with a pool that has a relatively high lime content you would do better to try the Fen Pondweed (*P. coloratus*), a species that will thrive under these conditions. The floating leaves of this plant are almost identical to those of the Bog Pondweed, but its translucent underwater foliage exhibits a pronounced reticulate veining, which to my mind makes it a much more desirable acquisition.

Beautiful veining is also the principle attribute of the Loddon Pondweed (*P. nodosus*); both the floating and submerged foliage being etched with a tracery of slender black lines. The fine upstanding spikes of fruits also give the plant a distinctive air, but unfortunately many of these are abortive and as far as I am aware no hybrids have resulted from a union with this plant. This seems regrettable as the superb veining of this species infused into some of the better leaved varieties such as the Reddish Pondweed (*P. alpinus*), would result in a most interesting and desirable race of aquatics.

Few other species with floating leaves are of any value to the pond-keeper, even if readily available, for they will invariably swamp the pond in a very short time. Two good examples of this are the Floating Pondweed (*P. natans*) and the Shining Pondweed (*P. lucens*), both despite having most striking foliage, quickly outgrow their allocated space and become a continual nuisance.

Of the innumerable natural hybrids of Potamogeton, only two are sufficiently distinct as to be worthy of special mention. *Potamogeton X nixii* (*P. lucens* X *P. gramineus*) and *P. X salicifolius* (*P. lucens* X *P. perfoliatus*) both of which have effectively reduced the vigorous and often undesirable *P. lucens* to manageable proportions.

Solution to "Find the fish"

see page 557

Answer, JACK DEMPSEY



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 **Barry A.S.** open show results were as follows: Standard Siamese Fighting Fish: 1 and 3, J. Wheeler; 2, F. Brown. Multicoloured Siamese Fighting Fish: 1, Mr. Warmant; 2, Mr. Mazy; Labyrinth: 1, Mr. B. Harding; 2, Mr. Gorwill; 3, Mr. Harding; 4, Mr. Smithson. Barbs: 1, Mr. P. Brown; 2, Mr. Warmant; 3, R. Wigg; 4, Garner. Hemigrammus and Hypophosphocyon: 1, Mr. Smithson; 2, B. Harding; 3, Mr. Brown; 4, P. Palyer. A.O.V. Characin: 1, A. Rogers; 2, Mr. Gorwill; 3, B. Harding; 4, P. Harris. Large Cichlids: 1, 2 and 3, J. Parsons; 4, B. Harding. Dwarf Cichlid: 1, J. Parsons; 2, Mr. Garner; 3, Mr. Barber; 4, Mr. Smithson. Catfish: 1, Mr. Gorwill; 2, P. Brown; 3, Mr. Warmant; 4, Mr. Gorwill. A.O.V. Egglayer: 1, P. Player; 2, F. Brown; 3, J. Parsons; 4 and 5, Mr. Warmant. Mollies: 1, Mr. B. Harding; 2, Mr. P. Brown; 3, Mr. J. Parsons; 4, Mr. J. Wheeler. Swordtails: 1 and 2, Mr. Smithson; 3 and 4, C. Harding. Platies: 1 and 4, B. Harding; 2, Mr. Smithson; 3, A. Rogers. Female Guppy: 1, Mr. Player; 2, J. Wheeler; 3 and 4, R. Wigg. Male Guppy: 1 and 3, Mr. Garner; 2, D. E. Thomas; 4, Mr. Songhurst. Breeders Egglayer: 1 and 2, Mr. Smithson; 3, P. Brown; 4, J. Wheeler. Breeders Livebearer: 1, Mr. Warmant; 2, Mr. Player; 3, J. Wheeler; 4, Mr. Smithson. Furnished Aquaria: 1, Mr. Nelson; 2, Mrs. V. Tippins; 3, J. Parsons; 4, Mrs. A. Ibberton. Common Goldfish: 1, 2, 3 and 4, B. Harding. Shubunkins: 1, 2, 3 and 4, J. Wheeler. Fancy Goldwater: 1, B. Harding; 2, G. R. Dyer. A.O.V. Coldwater: 1 and 2, B. Harding; 3 and 4, Mr. Gadd. Best fish in show won by A. Rogers. Cardinal Tetra, 90 pts. The acting chairman of the society until October is Mr. S. Nelson, owing to the resignation of Mr. R. Light.

RESULTS of the Gorton and Openshaw A.S. fourth annual open show were as follows: Guppies: 1, B. Thompson (Glossop); 2, W. Booth (T.A.B.); 3, S. Harrop (Ostram). Platies: 1, M. & W. (Sunnybrow); 2, Mr. & Mrs. Bone (Huddersfield); 3, W. Grey. Swordtails: 1, Grimshaw (Sunnybrow); 2, Taylor (Bradford); 3, Hogarth (Independent). Mollies: 1 and 2, W. J. Orton (Salford); 3, P. Duffy (F.G.A.). Anabantids: A: 1, P. Hodgkinson (Salford); 2 and 3, B. Taylor (Aireborough). B: 1, P. & H. (Gorton and Openshaw); 2, F. Mulla (Merseyside); 3, Mr. and Mrs. Bone (Huddersfield). Barbs: A: 1, Mr. and Mrs. Buxton (Barnsley); 2, Mr. Tonge (Oldham); 3, P. & H. (Gorton). B: 1, G. Kershaw (Heywood); 2, M. & W. (Sunnybrow); 3, Mr. and Mrs. Webb (Salford). C: 1 and 2, K. Parks (Merseyside); 3, Grimshaw (Sunnybrow). Cichlids: A: 1, P. Barritt (Aireborough); 2, A. Gardner (Heywood); 3, G. Howard (Blackpool). B: 1, R. Moorcroft (Merseyside); 2, A. Newsome (Gorton); 3, P. & H. (Gorton). C: 1, P. Barritt (Aireborough); 2, R.

Moorcroft (Merseyside); 3, K. Parks (Merseyside). Characins: A: 1, Taylor (Glossop); 2, Miss Kaye (Huddersfield); 3, P. Moorhouse (Bradford). B: 1, S. Harrop (Ostram); 2 and 3, F. Bishon (Valley). C: 1, Mrs. Parks (Merseyside); 2, F. Mulla (Merseyside); 3, R. Moorcroft (Merseyside). Labcon Sharks: 1, R. Hughes (Gorton); 2, N. Kirkby (Merseyside); 3, P. Barritt (Aireborough). Killifish: 1, Grimshaw (Sunnybrow); 2, Mrs. Bulleyment (Nottingham); 3, P. & H. (Gorton). Rasboras: 1, P. & H. (Gorton); 2, R. Moorcroft (Merseyside); 3, P. Redmond (Sunnybrow). Danios, etc.: 1, K. Harrop (Ostram); 2, Selby (Huddersfield); 3, F. Bishon (Valley). Catfish: A: 1, G. Kershaw (Heywood); 2, Mrs. Bulleyment (Nottingham); 3, P. Edmond. B: 1, F. Mulla (Merseyside); 2, Mr. Trench (Warrington); 3, A. E. Gardner (Heywood). C: 1, B. Parkin (Huddersfield); 2, A. Gardner (Heywood); 3, Mrs. Bulleyment (Nottingham). A.O.V.: 1, M. & W. (Sunnybrow); 2, P. Moorhouse (Bradford); 3, M. Taylor (Huddersfield). Goldwasser: 1 and 2, P. Moorhouse (Bradford); 3, S. Walsh (Accrington). Breeders: A: 1 and 3, P. Duffy (F.G.A.); 2, W. Booth (T.A.B.). B: 1, Mrs. Bulleyment (Nottingham); 2 and 3, Mr. and Mrs. Buxton (Barnsley). Pairs: A: 1, W. J. Orton (Salford); 2, F. Bishon (Valley); 3, Miss Kaye (Huddersfield). B: 1, B. Parkin (Huddersfield); 2, G. Hamnett (Huddersfield); 3, J. Greenwood (Huddersfield). Juniors: A: 1, N. Kirkby (Merseyside); 2, B. Seabright (Gorton); 3, P. Hodgkinson (Gorton). B: 1 and 2, P. Hodgkinson (Gorton); 3, Miss Kaye (Huddersfield). Best fish in show trophy was won by P. Barritt, who was also awarded a large P.V.C. fish tank presented by Rochdale Aquarium Specialists. The Westhead Trophy was won by P. & H. of Gorton and Openshaw (Mr. Price and Mr. Hodgkinson). The chairman's trophy was also won by P. & H. of Gorton and Openshaw Society. The local society welcome new members, and any enquiries should be sent to Mr. E. Price, 192 Chapman Street, Gorton, Manchester 18. Telephone East 3424.

THE **Shaston A.S.** has been renamed the **Shaftesbury A.S.** The club was first formed some 14 months ago, and since then have had the assistance of Mr. R. Matley, Mr. I. Andrews, Mr. B. Coombs, of the Bourne-mouth Club, and Mr. J. Stillwell of Portsmouth, also Mr. Brown of Salisbury, as speakers. Their willingness to travel the distance they do to give the benefit of their knowledge is worthy of public mention. The secretary is Mr. R. Forward, 7 Pill Meadow, Kington Magna, Gillingham, Dorset.

IT has been some time since **Bracknell and District A.S.** were in the news. Recently members have enjoyed a social evening with Reading, and illustrated talks by the Killifish Association and Mr. Katrinsky have proved very successful in bringing new blood into the club. Mr. Brian Johnson was voted Aquarist of the Year and the society were delighted once again to have won the Oxford Cup.

The "Bracknell Harlequin" a monthly newsletter printed and edited by Mr. Les Jordan and family has proved very successful among other Three County Societies since its earlier beginnings. Copies are available from Les Jordan, 62 Fernbank Place, Ascot. Printing

costs are entirely covered by the Spot and Fish competition open to everybody and entirely devised by Morris Carter. The competition is very similar to the Spot the Bull competition run in the national newspapers. The newsletter contains news from clubs, items for sale, coming events, tip of the month and many other interesting articles as well as a special feature from Bill Jordan resident in Washington, D.C., U.S.A.

ALTHOUGH all officials and members of the **Hendon A.S.** are busy organising the mammoth task of preparing another Congress they have still been able to relax on every Thursday evening to hear the weekly programmes. The society make special play of their own Annual Home Furnished Aquaria competition and recently one programme was devoted to the reports of the judges (Ray Maynard and David Finch) on their verdicts. It was explained how they awarded their marks, and what they were looking for. The photographer who accompanied them (Alan Stevens) highlighted the aquariums that were judged and the judges were able to give, pictorially, their critical appreciation. First prize and the Pegley Trophy was awarded to Keith Purbrick, second prize went to Charlie Spencer—just two points behind with 85 points, and third prize to one of the many juniors—Master Stephen Smith. The club was also recently pleased to receive Dr. East of B.A.S.S., who gave a most interesting lecture on fishes.

Hendon is fortunate in the fact that it has many able and proficient lecturers and fish photographers among its members and has no problems in arranging 52 programmes a year. A recent meeting highlighted yet another good photographer when Joe Gorman (show secretary) showed his colour transparencies against a talk by Keith Purbrick. One of the society's most experienced members, Betty Robertshaw, lectured on a subject other than her beloved Characins—namely Rasboras, and enthralled the members with recounting her experiences in the keeping of these fishes and her success in breeding the Harlequin. Although outside the scope of the lecture Betty Robertshaw also recounted her recent success with the breeding of Ember Barbs.

A number of the members recently visited friends at Mid-Herts A.S. to present to one of its members, Bill Davidson, the special trophy for best fish in show at Hendon's Open Show. The evening was greatly enjoyed, especially with the programme laid on by Mid-Herts A.S.—a Crisis Cross Quiz. The final result being a draw.

It goes without saying that any person interested in the keeping of fishes is most welcome at Hendon—whether a beginner or experienced. We meet every Thursday at 8 p.m. at the Brotherhood Hall, Edgware Road, West Hendon, London, N.W.9 (200 yards past Duplex and Schwepes). If you prefer to write for details the club secretary will be pleased to give any information—Keith Purbrick, 3 Holme Way, Stanmore, Middlesex.

THE **Salford A.S.** open show results were as follows: Mollies: 1, Mr. & Mrs. Standen (Loyne) 75 pts.; 2, S. Harrop (Ostram) 73 pts.; 3, G. Howard (Blackpool) 71 pts. Swordtails: 1, Mrs. M. Cobb (T.A.B.) 73 pts.; 2, J. Degen (Sunnybrow) 72 pts.; 3, J. Shepherd (Salford) 69 pts. Platys: 1, W. Naylor (Aireborough) 76 pts.; 2, Miss B. Kaye (Huddersfield) 75 pts.; 3, S. A. Foley (Salford) 72 pts. Guppies: 1, J. Shepherd (Salford) 78 pts.; 2 and 3, W. Orton (Salford) 76 pts. Large Barbs: 1, J. Murray (Belle Vue) 73 pts.; 2, M. & W. (Sunnybrow) 71 pts.; 3, J. Whitley (Aireborough) 68 pts. Small Barbs: 1, Mr. & Mrs. Grimshaw (Sunnybrow) 74 pts.; 2, Miss B. Kaye (Huddersfield) 71 pts.; 3, J. A. Beasley (Ostram) 70 pts. Large Characins: 1, J. Whitley (Aireborough) 84 pts.; 2, J. Murray (Belle Vue) 78 pts.; 3, S. Harrop (Ostram) 76 pts. Small Characins: 1, Mr. & Mrs. Standen (Loyne) 78 pts.; 2, Mr. & Mrs. Grimshaw (Sunnybrow) 77 pts.; 3, L. Allip (Halifax) 75 pts. Dwarf Cichlids: 1, R. Wombell (Rotherham) 78 pts.; 2, B. Moorcroft (Merseyside) 77 pts.; 3, P. & H. (Gorton and Openshaw) 76 pts. Angels: 1, G. Edmunds (Salford)

PREVENTS

ALGAE
Hillside Aquatics London N12

[London Transport]; 3, M. J. Smith (Walthamstow). Sweedtail: 1, Mrs. Nicoll (Reigate & Redhill); 2, B. Mather (Walthamstow); 3, P. G. Abbott (Brent). Platy: 1, Mr. Young (Reigate & Redhill); 2, Mr. Appleyard (Thurrock); 3, C. Chisholm (Croydon). Livebearers: 1, D. C. H. Durrant (Thurrock); 2, K. Dryden (Croydon); 3, Mr. Hunter (North Kent). Cichlid: 1, Mr. Thorne (Hounslow); 2, B. Pearson (Freelance); 3, G. Lockwood (Lavergro). Barb: 1, Mr. Thorne (Hounslow); 2, Mr. Young (Reigate & Redhill); 3, Q. Taylor (Reigate & Redhill). Rasbora/Minnows: 1, R. H. Johnson (Mid-Sussex); 2, T. D. Smith (Brent); 3, Mr. Thorne (Hounslow). Tooth-carp: 1, R. Clouston (Erith and District); 2, T. W. Glass (Willesden); 3, Mr. Young (Reigate & Redhill). Characin: 1, Mr. Thorne (Hounslow); 2, J. W. Penny (Croydon); 3, T. D. Smith (Brent). Labyrinth: 1, Mrs. Hunter (North Kent); 2, J. Marshall (Croydon); 3, D. H. Crowley (Croydon). Corydoras: 1, Mrs. Nicoll (Reigate & Redhill); 2, C. Chisholm (Croydon); 3, E. Nicoll (Thurrock). A.V. Catfish/Loach: 1, R. Cooper (Kington); 2, Mrs. Nicoll (Reigate & Redhill); 3, Mr. Tee (Brighton). Egg-layers: 1, Mr. Howes (Freelance); 2, J. G. Stockwell (London Transport); 3, B. Harvey (North Kent). Egg-layers (Breeder): 1, D. C. H. Durrant (Thurrock); 2, H. Wood (Croydon); 3, Mr. Tee (Brighton). Livebearers (Breeder): 1, K. Dryden (Croydon); 2, H. Wood (Croydon); 3, H. Parker (Croydon). Fighters: 1, D. C. H. Durrant (Thurrock); 2 and 3, H. Wood (Croydon). Angels: 1, T. Rose (Croydon); 2, C. Wood (North Kent); 3, Mr. Stamp (Reigate & Redhill). Common Goldfish: 1, A. G. Pearce; 2, R. E. Dudley (S.P.A.S.S.); 3, C. Felleman (Clapham). Shubunkin: 1 and 2, K. T. Sherwood; 3, A. Simmons. A.V. Goldfish: 1, Mrs. Smith; 2, A. G. Pearce; 3, A. Simmons. Native or foreign Goldfish: 1, E. Lough (Carlford); 2, K. Owen (Carlford); 3, Mr. Macanionnaisigh (Tottenham).

The F.B.A.S. Trophy for Loaches was won by R. Cooper, of Kington, with a *Botia Siddhamuni*, and the Labyrinth Trophy by Mrs. Hunter, of North Kent, with a *Macropodus Concolor*. The Ladies Rose Bowl was presented to Mrs. Nicoll of Reigate and Redhill, who was the top lady exhibitor, and the "Croydon" Cup was won by the host Club Croydon A.S., who gained most award cards won by aquarist societies. A total of 407 entries were benched and the best fish in the show trophy was presented to Mrs. Smith for her Pearlscale which gained 82 points.

OFFICERS elected at the Loughborough and District A.S. annual meeting were as follows: Chairman, A. Chapman; Secretary, F. Hopewell, 61, Morley Street, Loughborough; Treasurer,

M. Farndon; Show Secretary, J. Purdy; Librarian, Miss P. Hayward; Public Relations Officer, C. Roberts. Additional committee members were: D. Hill, G. Bonbridge, S. Purdy. Social committee: Miss P. Hayward, M. Jarram, M. Farndon, D. Woods, D. Halford. Delegates for M.A.A.S. were P. Hopewell (Secretary and M.A.A.S. Bulletin Editor); M. Farndon (Treasurer); M. Jarram (Committee Member). R. Tiller, M.A.A.S. judge offered his services again for the forthcoming year.

After the treasurer's report had been given the chairman, Mr. A. Chapman, commented that the society was now in a very good financial position, this being achieved in only 18 months of existence. Some expensive items have been purchased in the last year and now the society has these necessities, great strides can be taken in other directions. Several newcomers also attended the meeting. Results of the table show: A.O.V.: 1, P. Hopewell; 2, N. Vesey; 3, F. Hopewell; 3, R. Howard. Competition winner was J. Purdy. The open show date next year has been fixed for 8th June, and further details will be available later.

MORE than one thousand people an hour passed through the Tropical Fish Display at the Hull A.S. show held in August. The result of the Furnished Aquariums: 1, T. Collingwood (Hull); 2, L. Vint (Hessle); 3, A. Douglas (Hull). Special award: Mrs. E. Chapman (Hull). Junior: Master N. Tyson (Hull). Tropical and Coldwater results—Coldwater: 1, A. Harrison (Hull); 2 and 3, K. Berry (Hull). Cats and Loaches: 1 and 2, T. Collingwood (Hull); 3, B. Stabler (Hull). Guppies: 1 and 3, D. Smith (Tadcaster); 2, A. Harrison (Hull). Livebearers: 1 and 3, T. Douglas (Hull); 2, T. Collingwood (Hull). Rasboras, Danios, Minnows: 1, T. Douglas (Hull); 2, P. Rimmer (Hull); 3, F. Ledger (Huddersfield). Barbs: 1, A. Douglas (Hull); 2 and 3, A. Dry (Hull). Large Cichlids: 1, R. Taylor (Aireboro); 2, P. Barratt (Aireboro); 3, R. Buksh (Hull). Dwarf Cichlids: 1 and 3, T. Collingwood (Hull); 2, L. Kaye (Huddersfield). Characin: 1, R. Buksh (Hull); 2, L. Kaye (Huddersfield); 3, A. E. Whitlock (Tadcaster). Fighters: 1, A. E. Whitlock (Tadcaster); 2, L. Kaye (Huddersfield); 3, A. E. Whitlock (Tadcaster). Anabantids: 1, F. Ledger (Huddersfield); 2, T. Douglas (Hull); 3, R. Taylor (Aireboro). Breeder (Livebearers): 1, H. Gædner (Leeds); 2, F. Ledger (Huddersfield); 3, T. Collingwood (Hull). Breeders (Egg-layers): 1, 2 and 3, P. Rimmer (Hull). Killifish: 1 and 3, P. Rimmer (Hull); 2, L. Greenall (Tadcaster). Sharks: 1, T. Douglas (Hull); 2, T. Collingwood (Hull); 3, P. Barratt (Aireboro). A.O.V.: 1 and 2, Mrs. Lea (Hull); 3, M. Douglas (Hull). Best Fish in Show: R. Taylor (Aireboro).

In a friendly match against York A.S. the results for Hull were: Livebearers: 2, A. Harrison; 3, T. Collingwood. Barbs: 1, T. Collingwood. Cichlids: 2, T. Collingwood; 3, R. Buksh. Characin: 1, T. Collingwood. Cats: 3, A. Douglas. Egg-layers (Breeders): 1, and 2, P. Rimmer. A.O.V.: 2, R. Buksh; 3, T. Douglas. Tooth Carps: 1 and 2, P. Rimmer. Anabantids: 1, T. Douglas. Recently, Mr. Norman Banks, the well known aquarist from Airmyn, near Goole, gave a talk on his experiences of fishkeeping. This was a very interesting and enjoyable talk to the large number of members and guests present. Meetings are held every first and third Wednesday of the month at the Railways Club, Anlaby Road, Hull. All visitors and prospective members are sure of a warm welcome.

NEW SOCIETY

THE West Cumberland A.C. has been established for eight weeks, and has twenty members. The meetings are held on Tuesday night 1st, 15th and 29th October; 12th and 26th November; 10th and 24th December, and the secretary is L. Speaks, 34 Sneafell Terrace, Seacliff, Whitehaven.

AQUARIST CALENDAR

6th October: Heywood and District A.S. Second Open Show at St. John's Ambulance Hall, Bamford Road, Heywood, Lancs. Details from Mr. K. Hill, 29 Chadwick Lane, Heywood, Lancs.

12th October: Cheltenham and District A.S. Annual Open Show, Ambulance Headquarters Hall, 86 Gloucester Road, Cheltenham.

17th, 18th, 19th October: Scottish A.S. Annual Open Show, McLellan Galleries, Sauchiehall Street, Glasgow.

26th-27th October: British Aquarist's Festival Belle Vue, Manchester.

3rd November: N.E.L.A.S. Annual Open Show in the National Engineering Laboratory, East Kilbride.

10th November: Halifax A.S. Annual Open Show, Smith Bulmer & Co. Ltd., Holmfild Mills, Halifax. Schedules from A. G. Whyte, 11 Rothwell Drive, Halifax.

10th November: Hartlepool A.S. Annual Open Show at Longcar Hall. Schedules available from J. D. Watson, 42 Sydenham Road, Hartlepool, Co. Durham.

1st December: Aireborough and District A.S. 7th Annual Open Show. The Town Hall, Guisley, Nr. Leeds, Yorkshire. Schedules and details available from the show organiser and secretary: Mr. G. E. Walker, 2 West End Terrace, Guisley, Nr. Leeds, Yorkshire. 1969

9th March: Huddersfield Tropical Fish Society. Open Show at The Drill Hall, St. Paul's Street, Huddersfield.

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