

April
1968

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Aquarist
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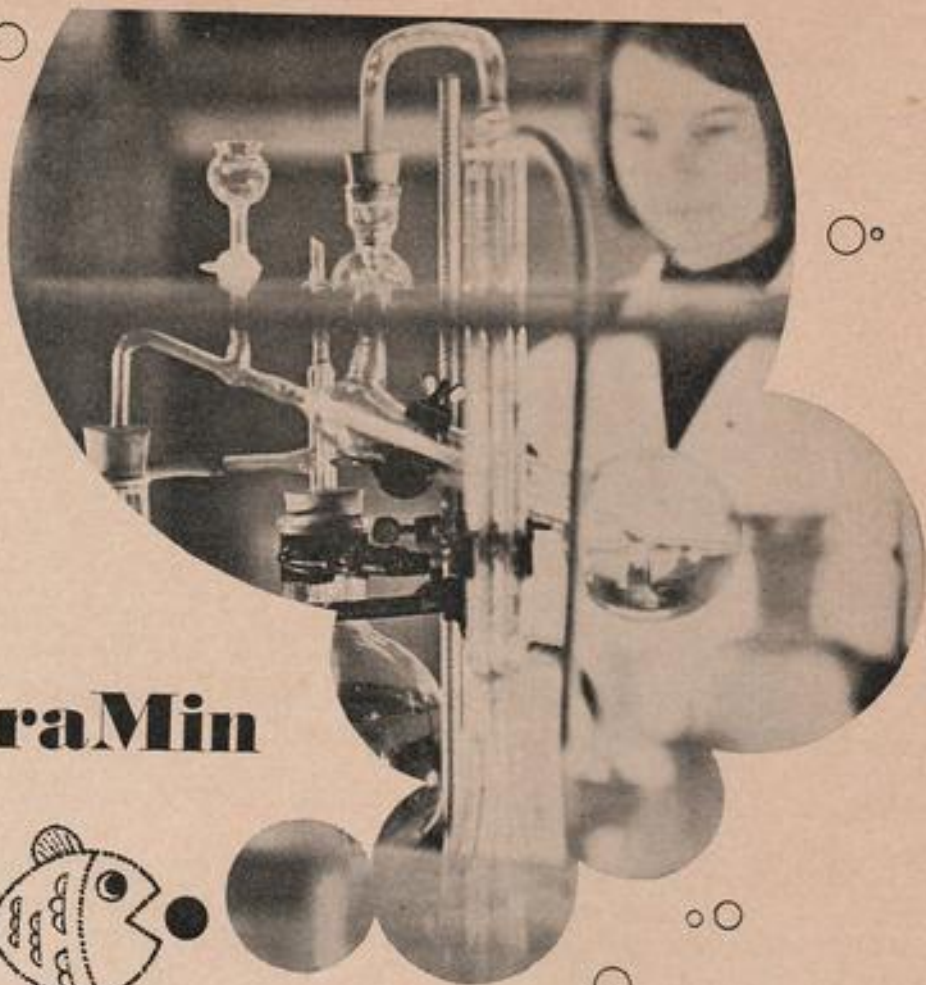
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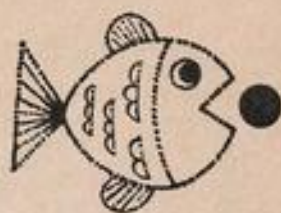
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April, 1968

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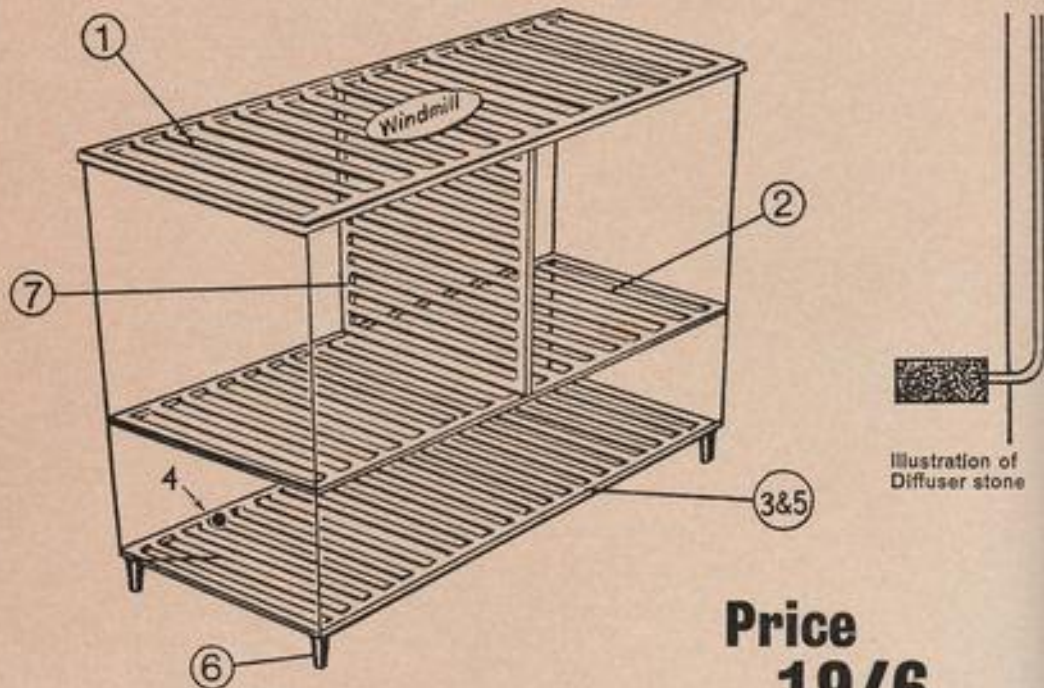
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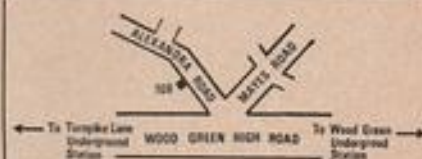
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Crypt. Nevillii 4/6 Each	
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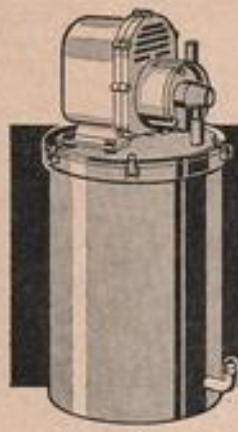
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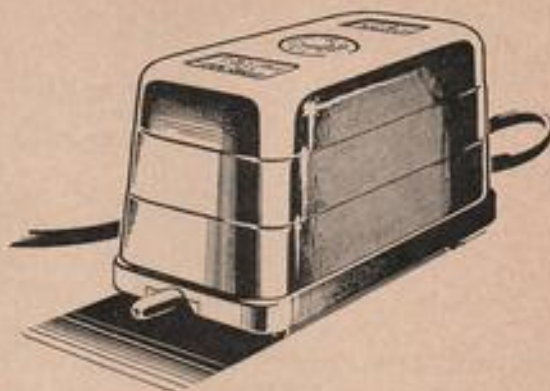
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The AQUARIST AND PONDKEEPER

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Controlling algae

by B. Whiteside

THE problem of algae in the aquarium is one which
faces the aquarist sooner or later. The usual answer
to the problem is to adjust the light which enters
the aquarium, or to use one of the available aquarium
algae-killers. Both of these methods are certainly effective
but the latter is rather expensive over a period if one
keeps several aquaria.

The problem arose recently in one of two aquaria
which decorate the entrance hall of a large secondary
school. One of the two tanks, both of which were set
up under seemingly identical conditions, produced an
unsightly growth of algae, while the other one was almost
free of algae. The question of light, both artificial and
natural, entering the tanks, was investigated and was
found to be identical in both tanks. Several other causes
were dismissed and the problem remained.

A visiting horticultural expert was asked for his views
on the problem and he immediately came up with the
suggestion that the temperature in one tank was a few
degrees higher than in the other. This was investigated
and it was found that the tank which was kept a few degrees
warmer than the other, was the one which produced the
unsightly growth of algae.

As the difference in temperature was only a few degrees,
the thermostat of the affected tank was adjusted so that
the water in both tanks was at the same temperature.
This happened a few weeks ago and now both tanks are
looking identical in freedom from algae, except for the
remains of the algae in what was formerly the warmer
tank. The problem, which had remained for a long time,
was solved in a few seconds with a screw driver.

I have tried this solution with another tank and it has
again solved the problem. Should any of your tanks
have a problem of excess algae, check the temperature
and see if it is much above 75°F. If so, it is well worth
trying the temperature a few degrees lower for a period
to see if it will solve the problem. It is such a simple
solution considering the problems of adjusting light,
water hardness, p.H., and should be at least as safe as
using chemical means.

Obviously the higher temperature favours the growth
of some species of algae and the few degrees difference
seem to be critical. I would be rather interested to hear
if other aquarists with an algae problem find that this is
the solution. If you have anything to report, please
drop me a line c/o *The Aquarist*.



Mabuya multifasciata



Easy to feed and handle, these Skinks provide an attractive and fascinating addition to the vivarium



ALTHOUGH less gaily coloured than many lizards, these skinks make attractive inhabitants of a vivarium. As in all skinks the legs appear weak in relation to the rather heavily built body but in this species the tail is longer and slenderer than in most of their near relatives, being as long or slightly longer than the body and tapering sharply from a thick base to a fine point.

Their overall length is about nine to ten inches which together with their bulk makes them somewhat impressive in appearance. They are less active however than many smaller species and keep in good condition and seem to be perfectly content in comparatively limited quarters.

The dark grey of the upper surface merges into a lighter grey along the sides and contrasts pleasantly with the pale yellow of the throat and under parts. They are particularly handsome immediately after sloughing their skins, when the grey is over cast with dark, bright green which gleams like burnished metal in the sunlight.

I obtained my present pair of these skinks early in the year from a newly imported consignment. They are ovoviviparous and I was told by the dealer who sold them to me that one of the females had produced five young ones shortly after it came into his possession. He showed me one of the

by H. G. B. Gilpin

babies which was dark, chocolate brown, almost black in colour and about two inches in length. He was feeding them on greenfly. This, apart from the trouble involved in collecting adequate supplies, seemed, judging from the condition of the one I saw, a satisfactory preliminary diet.

The adult skinks from the beginning were easy to feed. When I first brought them home they were even willing to eat blow-fly pupae. This was distinctly unusual as past experience had indicated that apart from fruit-eating lizards, these animals generally show little interest in food unless it manifests considerably more animation than that exhibited by a chrysalis. Possibly they had had little opportunity to feed whilst in transit and were sufficiently hungry to try anything their sensitive tongues suggested might be edible.

Since then they have been offered, and accepted, a variety of insects including locust hoppers, blow-flies, gentles mealworms and earwigs. They will also take woodlice. On the whole they show a preference for winged insects. Adult locusts are too large for them to cope with but they will each consume up to a dozen week-old hoppers at a "sitting." The introduction of an unfamiliar insect (to them) appears to stimulate them into orgies of over-eating. Towards the end of the summer a plague of crane flies appeared in this area. Quantities could be collected in the space of a few minutes from the outside walls of wooden buildings. These were avidly consumed by the skinks which, between them, disposed of between sixty and seventy of the insects in twenty-four hours.

After such heavy gorging sessions neither skink showed much interest in food for several days but both put on weight and were in fine condition by the beginning of winter.

One imagines that this type of feeding approximates to that they would experience in the wild state, where the advent of sudden swarms of insects would enable the lizards to build up sufficient stores of food in their bodies to enable them to survive periods of scarcity.

Apart from drinking, which they do by lapping up water with their long tongues, the skinks show little interest in water. Mine are kept in a very dry vivarium, eighteen inches by fourteen inches by fourteen inches, covered with a lid, in which holes covered with perforated zinc afford ventilation, and furnished with a bark covered log. Aquarium gravel to a depth of two inches is spread over the floor and at times, although they are usually to be found in the open part of the vivarium, they bury themselves in this medium or hide behind the log.

One of them once disappeared for several days in this way and when resurrected showed no inclination to eat. The animal deteriorated so rapidly that it became necessary to forcibly feed it with mealworms. Once having swallowed the larvae its appetite returned. The introduction of a dozen or so spiders completed the "cure" and within days it was eating its normal quota of food. It was some weeks however before it replaced its lost weight. Since this incident, if either skink has remained hidden for more than a few hours, I have uncovered it and there has been no repetition of the trouble.

These skinks are particularly satisfactory animals to keep as they rapidly become very tame. A week or so after they came into my possession both would take mealworms from the fingers. Individuals do vary to some extent. One of this pair, the female, gives the impression of enjoying being stroked, especially when it is in the process of sloughing its skin, whilst the other, although perfectly steady even when a hand is introduced into its quarters, dislikes being touched and slides out of range at the too close approach of a finger. The female shows no resentment and does not attempt to escape when picked up. I am told that these skinks will sometimes bite but none of the species has ever done so in my experience. This again may well be an individual idiosyncrasy.

They do dislike sudden movements and when the lid of the vivarium is raised, care should be taken to do so gently and unhurriedly as, though normally rather slow-moving creatures, when startled they can jump a considerable distance and move with surprising celerity.

Whilst these skinks live together with other members of their own species of approximately the same size, it is undesirable to mix them with different kinds of lizards, particularly if the latter are smaller than themselves. On the one occasion I did so, their projected companion being a good sized Wall Lizard, the skinks left no doubt as to their intentions, which were far from honourable, and it became necessary to remove the Wall Lizard with the utmost dispatch.

Coming as it does from a far warmer climate than ours, *M. multifasciata* requires a heated vivarium. I have obtained entirely satisfactory results by fitting a 25 watt, pearl electric light bulb into a socket screwed to the underside of the lid. The bulb is connected to a thermostat and maintains a constant temperature of 80° F.

The genus *Mabuya* is widely distributed throughout Africa, particularly in the South and West, where they are mainly found on exposed steppe land and savannah. They also occur in mountainous regions to a height of 5000 feet.

Cross-breeding the Barbs

by Ray Leggett

BEING an enthusiastic breeder, I was agreeably surprised when I noticed one of my male Black Ruby Barbs spawning with a female Rosy Barb. As they were in a community tank other fish were feasting on the eggs as fast as they were expelled.

I netted out the Rosy Barb and removed her to a tank of Rasboras and commenced feeding a diet of mosquito larvae, ox-heart and earth worms which I had found very good for conditioning females previous to spawning. Approximately 14 days later the Rosy Barb was again quite full so I set about preparing a breeding tank. From previous experience I found the best set-up for medium-sized Barbs was a 10 gallon 24 in. by 12 in. by 12 in. tank with the base, one end and the back painted dark green. As a spawning medium I used boiled coconut fibre which I arranged loosely along the back half of the tank and held down with several strips of lead sheeting.

I positioned the tank in a quiet corner of the fish room where the early morning sun would enter the front glass. The water was aged tap-water with a pH of 6.8 and hardness of 70 p.p.m. A heater and thermostat together with mild aeration kept the temperature at a steady 75°, at this stage the water level was 6 in.

Both fish were introduced an hour before sunset and I then left them alone and waited for results. I had hoped to see them spawning the following morning; however, they appeared to be completely disinterested in one another at this stage. That evening I added 1 in. of cool rain water as a stimulant and sure enough next morning I was rewarded with a good batch of eggs. I was able to observe the pair spawning, the Ruby driving the Rosy into the fibre where several eggs were laid and fertilised.

Spawning completed I removed the parents and added methylene blue to guard against fungus. By evening I noticed a considerable number had turned white and concluded these were infertile. I estimated that 150 eggs were laid and of these only 25 hatched. However, I was more than pleased and commenced the usual fry feeding.

At four weeks they were $\frac{1}{2}$ in. long and had a similar colour and body shape to young Rosy Barbs, they then began to develop a shoulder stripe and black markings in their dorsal fin. At 12 weeks they were 1 $\frac{1}{2}$ in. long and showing the shape and colour they maintained into their adulthood. Body shape was very similar to *Barbus ticto*. They had a black, gold ocellated spot on the caudal peduncle, one black bar running from the front of the dorsal down to the ventral fin. The leading edge of the dorsal was black with the remaining portion clear as were the rest of the fins. The overall body colour was a dull silver.

I spawned the parents again and this time received a greater number of fry but many were slow at developing and died off over the first six weeks.



Barbus Nigrofasciatus x *Barbus Conchonioides*

In all I reared eight from the first spawning and 12 from the second. Although I tried on several occasions, I could not induce these fish to spawn and as they all showed the same colour and finnage I did not succeed in sexing them.

During this time I decided to try several other matings and set up the same male Ruby with a Tiger Barb. On the fourth day these spawned, however the eggs failed to develop. I then tried a male Tiger Barb with the original female Rosy. Unfortunately, no eggs resulted; in fact, although the Tiger had been in brilliant colour previous to placing him in the spawning tank he lost all colour and simply hid in a corner in typical Barb fashion.

Next I paired the Ruby with a female Golden Barb (*Barbus semifasciatus*), eggs were received and fry hatched but all died within a few days.

I would like to have been able to further my experiments but as I was due to commence an overseas trip I had to sell my tanks, equipment, etc., and therefore gave the hybrid barbs to a fellow aquarist to continue attempts at breeding.

At the time of writing he has had no success and I can only conclude that they are males.



"I sometimes wonder if we move in the right circles"



Twisted *Vallisneria*

The growth-habit of *Vallisneria*

by B. Fry

THE species name of *Vallisneria spiralis* has nothing to do with the narrow ribbon-like leaves: it refers only to the coiled flower stem produced by the female plant. The male plant is not common. And the flowers it produces start life in a sort of translucent green mini-bag held close to the crown. In due course this green bag splits and releases lots of three- or four-petaled flowers. These rise to the surface where they open wide and display tiny yellow pollen heads. When a male flower meets a female flower fertilization takes place, whereupon the female flower stem contracts its coils and the seeds ripen near the bottom.

The names of "torta", or "tortifolia", applied to those vallisnerias with corkscrew leaves, derive from the Latin

tortus, meaning "crooked" or "twisted", but are not valid in botanical circles except, perhaps, as a varietal or third name, because vallisnerias with corkscrew leaves are merely natural sports, or forms developed from natural sports, of straight-leaved plants most of which seem to occur in the wild state in America or Asia.

V. spiralis itself is native to the southern half of the U.S.A. and southern Europe. The generic name of *Vallisneria* is after A. Vallesneri, an old-time Italian botanist. Between the two World Wars vast numbers of *vallisneria* plants used to be exported from Italy to meet the requirements of the aquarium trade. Much earlier it was used by doctors for the very practical purpose of keeping the water in the jars containing live leeches in a well-oxygenated condition.

Building and fitting out a fish-house

by A. Boarder

THERE are several types of fish-house and the choice must be one for the individual. No doubt most of them will be intended to house tropical fishes but any fancy goldfish enthusiast will find that a fish-house is of great benefit to him. The average pondkeeper will not require a fish-house but if a coldwater aquarist with a pond has some very good specimens of fancy varieties, it would be a good idea to breed in a fish-house where temperatures may be controlled. Some handymen will prefer to build the fish-house and so not only save expense but plan the building so that any special feature may be incorporated. It is not always easy to adapt a house of a certain type to fit in with any special arrangement needed.

Whether the fish-house is to be for tropicals or cold-water fishes there are two main types of construction. These are the span roof and the lean-to shapes. The lean-to is a very good one if it is to be built against a wall of the dwelling. This means that one wall is saved and not only that but it is almost certain that it will be easier to heat such a house as it will have a good solid wall to keep out the cold and give protection from winds. It may also be far easier to connect up any electric cables that may be required for heating the house.

Before erecting any permanent or semi-permanent structure it will be wise to contact your local authority to see if it is necessary to submit plans before building takes place. Usually no objection is made to portable sheds. If the necessary permission is not obtained beforehand it may mean that you will have to pull down the structure. Before making up one's mind as to the type required it will be a good idea to look through one of the gardening publications. These usually carry several advertisements for not only many types of garden shed but also garages. It may not seem a good idea to use a garage but some of these would make excellent fish-houses with a little adaptation. The main changes would have to be the alteration of the large door and the provision of more windows, especially in the roof.

Garages can be obtained in timber, in asbestos sheeting or concrete. Their prices range from £40 to £80. Timber garages can be cheaper depending on their construction. Some are made with weather-boarding whilst others are made with tongued and grooved timber. The latter would be dearer, and prices can vary as to the kind of timber used. The red wood types such as cedar and other non-rotting types are more expensive but could be a better buy as they would last longer.

If a cheap timber-constructed one was bought it could be well painted with Cuprinol to preserve the wood and a lining could be made with some kind of insulating material between this and the outside. This insulation is very important as such a condition could save expense when the question of heating comes to be considered. The internal lining can be of hardboard or some other form of sheeting. For a cheap lining it is possible to do

the task for next to nothing apart from the cost of the filling. It is always possible to obtain large cartons from various shops and these can be carefully opened out by removing the clips. Most of these cartons are constructed with a form of cardboard which has a corrugated lining. Such material is quite good as a liner for a fish-house. Once the lining is tacked into position the space between can be filled with any material to make a good insulation. Special mica (treated matter) is available and forms of Polystyrene fillings can be bought of the type used for insulating water pipes and tanks.

Once the cardboard is in position it can be covered with a cheap wallpaper or just have the joints sealed with strip tape and covered with an emulsion paint. If the fish-house is not insulated in some manner it will not be likely to function very well and is certain to be expensive to keep warm.

The size of the fish-house will depend on the space available and the amount which it is intended to spend. I do not think that a house would be of very much use if it was under 10 ft. by 6 ft., with about 6 ft. to the eaves and 7 ft. 6 in. to the top ridge. Such a construction would allow tanks to be arranged on each side, leaving the end opposite the door for the erection of a folding table on which one could work.

If the house is 6 ft. wide it would allow a good path up the centre with space each side for tanks up to 15 in. wide. A firm angle-iron staging is essential and this could be so constructed that one side could hold four rows of tanks one above the other, with four 24 in. tanks in each row. The other side of the house could hold rows of 36 in. by 15 in. by 15 in. tanks. If the door was made to open outwards this would give a little more space inside when one is entering or leaving.

With the two tiers of tanks at the sides it is possible to have shelves along part of the upper centre of house so that pumps and any other necessary equipment could be housed out of the way. Before the size of the proposed house is decided upon, it will be well to make a plan of how the inside will be fitted so that space is not wasted.

Having made up one's mind as to the type to erect, it will be necessary to prepare the site carefully. It will be found that it is a very good idea to construct some small pools at floor level on each side. These can either be constructed of concrete or tanks can be inserted in the ground. Once the site is marked out it will be necessary to provide a good foundation. A 9 in. wide footing of concrete will be good providing it is about 9 in. deep on a firm base. Once this footing is made the pools can be constructed. These will be very useful for the coldwater specialist in which to rear youngsters but it will also enable the tropical breeder to use them for spare plants or for breeding live foods. Instead of making the footings of concrete some concrete slabs could be used but if so they

must be firmly set in concrete to prevent any movement. It is also important to ensure that the footings are quite level at the top. Some special water-proofing can be laid on top before the shed is erected. Rolls of this material can be obtained from builders' merchants. Without this protection the damp could creep up and cause the timber to rot if this material is used.

When the footings are completed, the pools can be made. They can be 15 in. wide and run the length of the fish-house. Whilst the concrete is still soft, one or two divisions could be inserted. These can be pieces of glass or thin timber which is wrapped in newspaper. When the concrete is set the divisions can be drawn out easily and proper slides made to fit. The depth of the pools need not exceed nine inches.

The provision of windows for light will have to be considered. Some garden sheds, quite suitable as a fish-house, are sold with windows all along one side, but if sufficient windows are not included they can always be added. There will be no lights in the roof and so something will have to be done about this. Some types of corrugated plastic sheets are now available and one or two of these could be fitted into the roof to give all the necessary light. Too much light should not be provided as in the summer months the house could get too hot, although it is possible to fit blinds which could be used if the fishkeeper was likely to be at home during the day time.

It is possible to fit stout plastic sheeting inside the roof to ensure that too much heat is not lost during the winter. Just a gap between will help to keep the inside of the house an even temperature. Whilst constructing the base foundation it may be possible to insert a water pipe so that it could be connected up to the house supply as an adequate supply of water is always an advantage. Before the inside lining is fitted it will be a good idea to run any electric cables which will be needed and these can run to a switch board at the end opposite the door. A double-poled switch and fuse box should be included and if you are not knowledgeable in electricity get someone who is to do the installation.

If a concrete garage is being used it may be possible to remove one of the roof sheets and replace it with a transparent plastic one. Many of these garages are roofed with corrugated asbestos sheeting and one can obtain plastic sheets with the same flange for easy fitting. If the fish-house is of a fair size it will be a good investment to fit plastic guttering round it so that rain water may be directed into a butt for use if required.

The floor of the house can be concrete between the pools and a false flooring of timber which can be removed if necessary will be an advantage.

The heating of the house will be the next consideration. The main question for the tropical fishkeeper will be whether to space heat or heat each tank individually. To heat tanks to about 75°F., for most of the time will require a very warm atmosphere all the time and this cannot be provided very cheaply. An oil central heating system would be all right but would be costly. Also electric heating for the whole house would be expensive. Heating by an oil lamp could be satisfactory but a fairly powerful one would be required for the medium sized house. A good type of greenhouse heater which burns with a blue

flame would be very good and as long as good quality paraffin was used and the lamp kept clean all should be well. To be certain that tanks are kept at the required temperature I consider that they should be heated individually. In this case if a tank was not in use the heater could be switched off. Where several tanks are of the same size it is often possible to run four or more from one thermostat.

Some aquarists have constructed a system of water changing where filtered water is run into tanks at the top of the range and flowing over into the next tank. I do not like this system as not only can the flow pipe get choked and so cause a severe flooding but if there is any disease or pests in one tank the trouble could be spread through all the tanks.

It may be possible to fit a sink into the end of the house and a runaway into a sump or drain. This will prove very useful for getting rid of unwanted water when servicing any tanks. The lighting need only be necessary for the tanks and these should all be fitted with hoods and lights. The space between the top of a tank and the one above it should never be less than six inches. Otherwise it will not be easy to use a net if required. This does not mean the distance from the top of the hood as this can always be removed when needed.

If one is handy with tools and cares to make the fish-house himself it is probable that a good strong job can be made but it is rather doubtful if one can be made much cheaper than a bought one as timber is so very dear these days.

Apart from using timber there are other materials which could be used. If a stout frame-work was made it would be possible to cover it with asbestos sheeting. The corrugated type is the stronger but the plain is quite strong and will last for years and is only likely to break if given a sharp blow. Breeze blocks could be used for the outer structure and these could be floated over with a cement mix to make a good looking job. The latter type would have to be a fixture but the former could be so made that it would be portable, the sides and ends being bolted together.

Where the fish-house is some distance from the living quarters it may be possible to lay a length of the new type plastic hose so that it could be connected up to a tap in the house and to a pipe in the fish-house. This will obviate carrying water about and as this type of hose is practically everlasting there will be no need to roll it up after each time of using. Anyone who has had to deal with a goodly length of this hosepipe will know how it can act in the strangest manner, as it can grab hold of the slightest projection and become tangled up.

Once the house is completed the setting up of the tanks will be the next task. If the tanks are made to a similar pattern and size it will be possible for them to be interchangeable and so save wasting space. For the supply of electricity for heating and aeration it will be a good plan to have a proper switch board so that plugs can be inserted easily without having many unnecessary distributors about. Most of the feeding wires can run near the back of the tanks so that it is mostly out of sight.

In conclusion I must point out that what I have written is intended only to be a guide, as each fishkeeper will no doubt have special wants in mind but he will be able to decide on these by comparing with the ideas given.

The Junior Aquarist

Right:

Ventral view of a hermit crab as it appears when removed from its shell. Note the curly tender abdomen

Facing page:

Dorsal view of a hermit crab with no shell. Note the curly abdomen



The housing obsession of the Hermit Crab

by R. T. F. Gantès

DURING your strolls along the sea-shore, you must certainly have noticed, now and again, a number of shells that go scampering across the rocks and sand in a manner very different to the slow regular reptation of a winkle or other gasteropod. If you pick one up to try and find out what sort of animal is in it, all you will see of it at first is a pincer closing the opening. In a little while, however, a small spiderlike creature will pop its head and "paws" out and start scratching the tips of your fingers indignantly; it is a hermit-crab.

There are various species of this crab thriving under various latitudes; some are exclusively marine, some live on land and some share their existence between the two elements. But in any case they all have the same problem: a long, tender, unprotected abdomen that makes many jaws and bills water. To place this delicacy out of reach of the gastronomical ambitions of their surrounding enemies is vital for the hermit-crabs. And all of them,

wherever they live and to whichever species they belong, use, approximately, the same method of defence which consists in crawling backwards into the empty shell of a deceased gasteropod. The tender parts of the hermit-crab are thus protected by the shell and even if the shell is cumbersome, it is far better than walking about naked.

You might think it must be terribly painful to twist your body into a spiral so as to be able to thrust it into a snail-shell, but this is not always true. The hermit-crab's body is supple and flexible and we can even say that it has a natural curl. Furthermore, its rear part has a little hook-like organ with which it anchors itself to the interior of the shell. If Mother Nature began by playing a nasty joke on the hermit-crab, it seems she has since done her best to make up for it.

Alas! if the hermit-crab is still a thing of this world thanks to artificial proceedings, it remains, nonetheless,

an unhappy being, mentally unbalanced; a psychopath as one might say speaking of mankind. And of this we feel sure after a certain number of experiments performed in Kenya when we wanted to photograph a hermit-crab changing shells.

Let us here make a pause to explain what we mean.

The hermit-crab, as we said, lives in a shell. So do snails, oysters, cockles, mussels. . . . But in the latter cases the shells are something like an external skeleton that the wearers produce themselves and that grows with them. Things are different with the hermit-crab which is incapable of building a shell and dwells in a borrowed one. When it begins to outgrow this shell, all it can do is to start looking for a larger one.

One morning when the tide was low on the fairy beach of Turtle Bay, Kenya, we suddenly noticed something we had not noticed before because our attention had been attracted by so many other things: two tiny hermit-crabs bustling around an empty shell. Almost immediately, a third one sprang out from nowhere to join them.

"Ha! Ha!" we thought, "somebody's going to swap shells!"

And we prepared our cameras to immortalise the event.

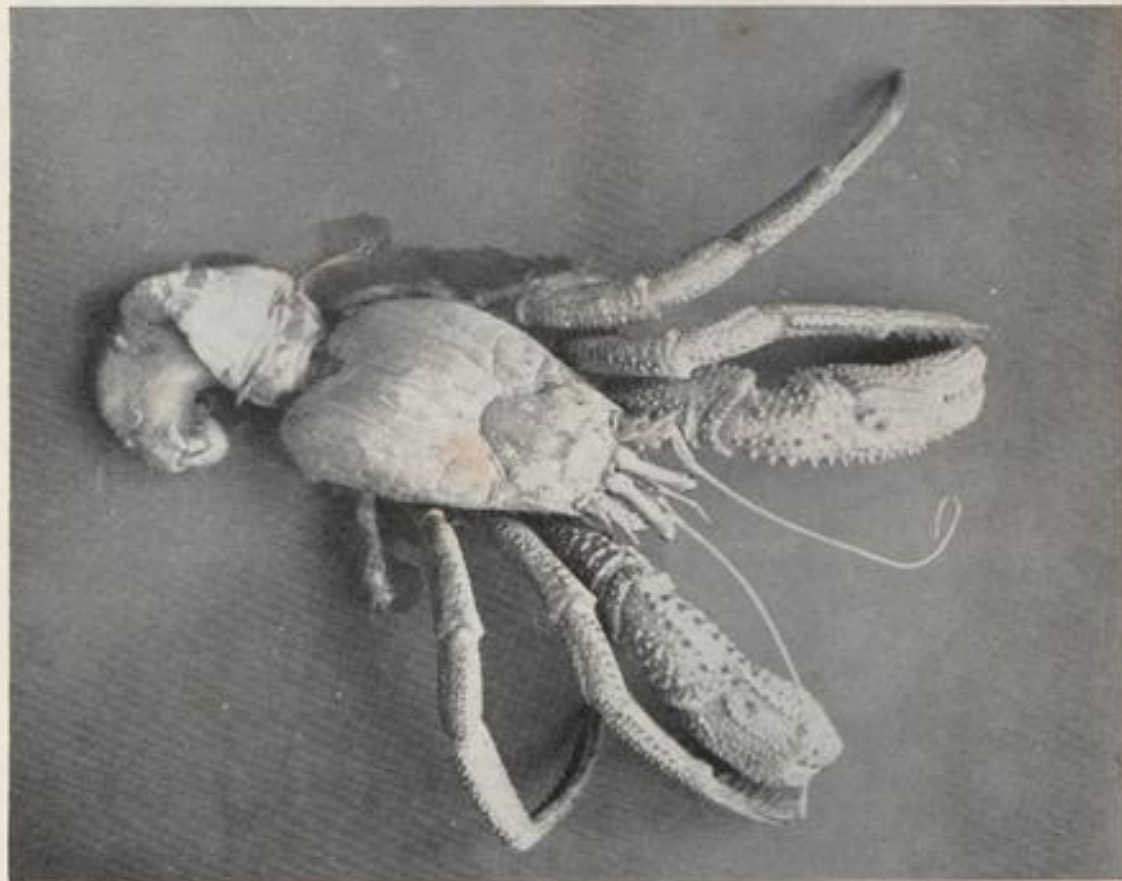
A fourth, a fifth hermit-crab turned up, but nothing ever happened until the tide came up again and washed the whole ballet away! It seemed to us as if each hermit-crab had said to itself:

"I will have to change my shell one day. I would willingly try this one which might be better than mine. But in the meantime someone might steal mine. And if this other shell is less comfortable than the one I am wearing. . . ."

And this is how hundreds, thousands, millions of hermit-crabs waste their time on the coast of Kenya and probably everywhere else!

"Well," we thought, "man must help nature." And we thought, in a manly manner, that if we took one hermit-crab, one empty shell, put them side by side and shooed away all the other competitors, our little fellow would be pleased to show us what it could do. The little fellow, however, did not seem pleased at all. Every single hermit-crab we placed in front of an enticing empty shell, after a short moment of breathless immobility, suddenly took to its heels and ran away!

Continued on page 366



The Hermit Crab

Continued from page 365

Aggravated by this uncooperative attitude, we tried the strong way . . . with tweezers.

After having buried the two separate parts of the heroic animal that had let itself be torn apart rather than give way, we decided it was not the right way. "Why don't you try heating the shell on a candle," suggested a friend, "with a slob of butter, a little garlic, a drop of white wine. . ."

We suspected our friend of being under the influence of an expensive French cookery book. However, since you should never neglect an inoffensive suggestion, we tested the idea of heating the shell . . . but soon put a stop to it when we saw the amount of useless suffering we were inflicting: we are convinced the poor little beast would have let itself be cooked rather than leave its burning shell.

On second thoughts, we figured, maybe these systems were too brutal; under the effect of sudden fear or pain, the animal would only react to blind instinctive impulses. But if we managed to bear upon it a slow progressive constraint that would give it time to use its brain, it might eventually come to the reasonable solution we desired: that is to say, to take the risk of leaving its shell when remaining in it becomes unbearable.

This is how we came to the idea of the basin. In theory it was a good idea and quite simple. Here is the recipe: fill a basin with sea-water and drop a few hermit-crabs inside; after some time, the hermit crabs will begin to feel ill at ease due to the progressive corruption of the water; place a few flat stones along the inner sides of the basin forming slopes up which the crabs may climb to freedom if they rid themselves of the weight of their shells . . . and wait . . . We waited, and after a few hours in the tropical sunshine the crabs were still in their shells at the bottom of the basin, and so groggy that all we could do was to let them go before they died.

At this point we were far more interested by the insane obstinacy of these little creatures than by our photographic sequence. They reminded us of certain human attitudes, both stupid and heroic, that constitute some of the most moving pages of our history books.

The last experiment we invented was so astute that we are still today, mildly surprised by our cleverness.

We put a land-living hermit-crab in an old canary



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Above:

Small hermit crabs quarrelling over an empty shell on a beach in Kenya. Note that the empty shell is larger than their own.

At left:

Under-water view of a hermit crab examining an empty shell.

cage and left it on the beach. The spaces between the bars of the cage were wide enough to let the crab out, but not its shell. Beside the cage we placed an empty shell, similar to the one it was occupying. And we waited. We waited two days in vain. Though freedom and safety represented by the second shell were but a few inches away, the crab remained in the cage, turning round and round, with no food, a prisoner not of the bars but of its shell!

Let us recapitulate the situation: here is a particularly vulnerable animal that would have long been extinct had it not found a means of protecting its fragile parts by introducing them into an empty shell. The hermit-

Continued on next page

THE AQUARIST

Find the fish

by D. Theil

The first is in BUS but not in TRAIN,
The second is in HALTER but not in REIN,
The third is in SHRUB and also in TREE,
The fourth is in OBSERVE but not in SEE,
The fifth is in CUBE and also in SQUARE,
The sixth is in SURPLUS and also in SPARE,
The seventh is in TRIKE and also in SCOOTER,
The eighth is in WHISTLE but not in HOOTER,
The ninth is in COTTAGE and also in CROFT,
The tenth is in ATTIC and also in LOFT,
The last is found in HOUSE and in HOME.

Solution on page 369

The Hermit Crab

Continued from page 366

crab did not build this shell. It is incapable of enlarging it. The shell is not part of its body as the snail-shell is part of the snail. It is merely a provisional shelter that the crab found, occupied, can leave when it wishes and will be obliged to leave one day, in any case, when it outgrows it: in other words a useful object as are, for us fragile humans, a pair of shoes or an overcoat. That the hermit-crab should stick to its shell as long as this shell offers it an adequate protection is an absolutely reasonable attitude to which no sane person can object. But when we see the shell take on an exaggerated importance, ask for more than it can give, become a tyrannical obsession in the life of its weater, we feel that something must have gone wrong somewhere.

We have seen that what should have been a reassuring shelter, far from appeasing the hermit-crab, becomes a subject of constant worry. We have seen the poor little beach-trotter, ever unsatisfied, crawl for hours round an empty shell that the tide will finally wash away before it could make up its mind whether it wanted it or not. And when we consider that it prefers to be cooked or pulled to pieces, die of starvation or asphyxiated rather than leave its shell, we are obliged to believe that this is not a rational behaviour and that we are dealing with a minute lunatic.

But when we think of the number of captains who have wilfully gone down with their ships, of the number of soldiers who have fought hopeless, useless battles and not surrendered, of the number of people who have had to be forced out of their homes during floods and fires, when we think of the hundreds of men, women and children who are killed every day in the name of ideas and ideals that were supposed to ensure them a happier living, we can but wonder if mankind is not quite as insane.

April, 1968

'CHAMPION OF CHAMPIONS' contest

Mr. Secretary!

THE premier award for fish-keepers will be contested for the second time at the British Aquarists' Festival to be held on 26th and 27th October at Belle Vue, Manchester. The preliminaries for this exciting event are already under way, and we wish to make a special request to Club Secretaries for full co-operation in notifying us promptly of their Open Show date.

This is most important to ensure the smooth running of the national contest, and to avoid disappointing delays in awarding the gold-plated pin to winners of "The Best Fish in the Show" competitions. It is these winners who qualify as entrants for the "Champion-of-Champions" Contest at Belle Vue, and it will greatly assist the organisers if Secretaries will forward the entry form for the "Champion-of-Champions" Contest **within five days after the Show date.**

Secretaries who have not received this entry form are urged to advise us promptly, and a copy will be sent, together with details of the Contest and the gold-plated pin for presentation. Forms have been sent to Secretaries where the Show date is known, but there are many Clubs still to be covered. The closing date for "Champion-of-Champions" entries is 30th September, 1968, but it is important that we have prompt advice of "Best Fish in the Show" winners on the completed entry forms without delay.



To summarise; will Secretaries please advise us of the date of their Open Show. We will send entry form, full details, and the gold-plated pin for presentation to "Best Fish in the Show" winner.

Complete the entry form when winner is known, and send it within five days to "Champion-of-Champions," *The Aquarist and Pondkeeper*, Half Acre, The Butts, Brentford, Middlesex.

One important point that should be made clear: to qualify for entry in the "Champion-of-Champions" Contest, the "Best Fish in the Show" award must have been won at an Open Show (and by this is meant a show open to any member of the public and not by invitation only), and also where show schedules are available. Winners at Table Shows and Table Shows open by invitation are not eligible to enter the "Champion-of-Champions" Contest.

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Remedy Review

"Snail Rid", for killing aquarium snails, price 8s. 6d. post paid.

THIS product which has been advertised in the American press for some time, is now available in Britain. It is supplied as a green liquid in a clear plastic dropper-bottle and is a solution of a copper salt. It is applied at the rate of 1 drop of solution per gallon of water and is colourless and odourless in use, becoming inactive in two to three weeks. "Snail-Rid" is claimed to be harmless to healthy fish and most plants but under certain water conditions it is better to siphon out several gallons of aquarium water whilst removing the dead snails. This is no problem as the snails have to be removed anyway. Dead snails should be siphoned out 8-24 hours after treatment.

This remedy may affect some plants and I found that *Ceratophyllum* (Hornwort) showed some signs of disintegrating, but when some of the tank water was changed the plants recovered. This is pointed out in the leaflet with the remedy. If there are a lot of snails in a tank the treatment may have to be repeated a few days after the first dose. The treatment also claims to kill most snail eggs but those which escape can be killed after hatching.

If snails are one of your problems, "Snail-Rid", carefully used, can be the answer.

Equipment Review

Hykro Brine Shrimp Hatcher, price 9s. 0d.

FEW aquarists would disagree that brine shrimp is the best food for most baby fish but the problem of hatching the shrimp and then separating them from the empty or unhatched egg-shells produces a time-consuming and patience-trying occupation. Having tried the Hykro Brine Shrimp Hatcher I must admit that most, if not all, of the problems seem to have been solved.

The unit consists of a flat plastic dish which has several compartments which are open at the top. On these sit a series of plastic rings which are joined together. The salt mixture supplied is dissolved in the appropriate amount of water and poured into the unit. The packet of shrimp eggs, which contains about 500,000, is scattered on the brine solution in the outside ring, and a little plastic cup, complete with handle and strainer is fitted into the middle of the unit. The lid is placed on the unit which is placed in a warm, light position. As the eggs hatch, the shrimp are attracted to the strainer area, which alone is in light, and the shrimp can be removed in the strainer, washed quickly under the tap, and rinsed into the tank of baby fish.

The hatcher can be floated in an aquarium but I have had as much success with it sitting on the cover glass of an aquarium, the light attracting the shrimp. The hatcher only takes a couple of minutes to set up and the shrimp can be removed, freed from egg shells, washed under the tap, and used, in a matter of seconds. Shrimps are available in about two days after setting up the hatcher and suppliers are available for four or five days. Two

or more hatchers can be used when large supplies of shrimp are needed and hatchers are designed so that they can be stacked on top of each other. The unit is supplied with a special plastic spoon which is used to measure the quantity of salt and of shrimp eggs needed for each hatching.

To me, this is the easiest and most efficient method of hatching brine shrimp for the aquarist with a couple of tanks.

'African Aquarist'

African Aquarist is a bilingual monthly (English and Afrikaans) which will be especially welcomed by the growing band of aquarium keepers in Southern Africa. The first two issues (November and December) include articles on the importance of vitamins of the B complex in the diet of aquarium fish, tilapias as destroyers of mosquitos and as an easily raised food for the peoples of Natal, breeding the red-tailed black shark, the history and care of the goldfish, and building and stocking a marine aquarium.

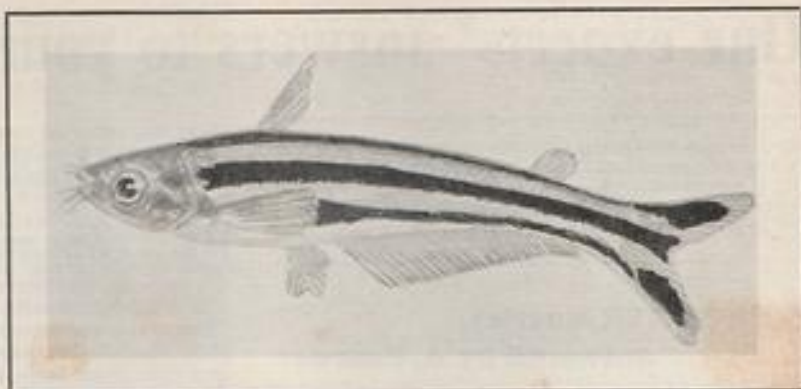
The editor, Mr. D. Pistor, a professional journalist with considerable experience in fishkeeping behind him, is hoping to feature articles on some of the new (to aquarists) cichlids from Lake Nyassa and thereabouts, and other African fishes, in the near future. Although *African Aquarist* is primarily for fishkeepers, we hope that Mr. Pistor will not close his door to articles on the reptiles and amphibians of the Dark Continent. For as well as on-the-spot observations on African fishes, those of us—and we, too, are a growing band—who combine vivarium keeping with aquarium keeping would benefit from some articles on the natural environment (terrain, temperature tolerance, and the like) and care in captivity of the various creatures that, millions of years ago, forsook the dwindling waters for the land. *African Aquarist* is published by Torpis Publishing Co., P.O. Box 1275, Bloemfontein, S.A. It sells at 3s. 6d. a copy or £2 for 12 issues, post paid.

J.H.



THE AQUARIST

The three-striped glass catfish, native of the Congo



Etropiella debauwi

■ by Jack Hems

Etropiella debauwi, commonly called the three-striped glass catfish, is a member of the family *Schilbeidae*. Members of this family, that range in length from a few inches to a foot or more, are widespread over tropical Africa, and parts of Africa beyond the tropics, and south-east Asia. They are characterised by an elongated body flattened on the sides, spinous (anteriorly) dorsal and pectoral fins, a long-based anal fin, and teeth in the jaws and palatine bones. In most species of the numerous genera an adipose fin, of sorts, is present, and, with a few exceptions, the caudal fin is forked to a greater or lesser degree. The barbels, four to eight in number, may be either short or long.

E. debauwi is native to the Stanley Pool region of the Congo. It was first described for science by G. A. Boulenger, the zoologist and authority on African fishes, in 1901. But it was not until some fifty-three years later that the species began to turn up in the tanks of dealers in Europe and America. Like so many interesting and choice fishes from the troubled Congo, *E. debauwi* does not come onto the market as often as one would wish. Also, there appears to be no record of its having bred in captivity.

The body is silvery, almost glass-clear in parts, shading to pearly white on the throat and belly. There are three dark grey to blackish stripes on the sides, the middle one extending onto the fork of the caudal fin. The dorsal fin is short and is situated close to the head. Three pairs of barbels, silver like the body, and so fine as almost to escape notice, are carried in a forward position. The sexes are not easily told apart, but in well-grown specimens the male (according to authoritative writers) is slimmer and darker striped than the female. A length of 3 in. may be attained.

Unlike most catfishes known to the tropical aquarist, the three-striped glass catfish finds its pleasure and its food in the middle and upper levels of the water. In short, it is neither a floor-shuffler nor a seeker-out of other fishes' left-overs. It swims in short, sudden darts or rapid dashes (when frightened) from one end of the

aquarium to the other. It takes its rest in a slightly head-upwards position, its tail shaking perpetually.

With regard to food, *E. debauwi* is essentially carnivorous, and it is reasonable to assume that insects, aquatic and otherwise, make up the bulk of its diet in the wild. But be this as it may, in captivity it can be fed on a wide variety of food, dried food included.

At this point, however, it is necessary to mention that not all specimens will accept everything, and some newly-purchased specimens may refuse to take any food at all. But unless there is something very exceptional about the fish or the aquarium into which they have been introduced, interest in food will be resumed within the space of a few days, provided the fish are left in peace and quiet to get over the abrupt change of environment.

In the matter of environment, *E. debauwi* settles down fastest in a long aquarium (24 in. at least) filled with clear, well-aerated, soft neutral to slightly acid water maintained at a temperature of from 75°F. (24°C.) to 78°F. (26°C.). It should be furnished from the middle back with dense thickets of tall-growing vegetation.

Last but not least, *E. debauwi* is a shoaling fish and usually becomes increasingly inactive and mopy if it is separated from the company of its own kind. Obviously, then, if the fish is to flourish, it should be kept in a group of three or more. Equally important is the fact that it should never be placed with any fishes (it will not harm other fishes) that will become so interested in its fascinating quiverings that they will take bites at it or worry it to an early death by too much jostling or boisterous activity.

FIND THE FISH—(see page 367)

Answer BARBUS TICTO

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

A heron is taking goldfish from my pond. Is there anything I can do to keep it away?

Once a heron finds fish in a garden pond it may return until all the fish have been eaten. Herons do not usually alight in the water but do so near it and then walk in. This gives you an opportunity to run some fine black wire around the pond at about a foot high. This can be so arranged that it is hardly visible and when the bird touches it it will be scared away. It is also a good plan to place one or two pieces of mirror glass hanging from sticks near the pond. The reflection will often frighten a bird away. If there are plenty of water lily leaves covering part of the pond the fishes would be able to get out of sight.

I have four goldfish in a tank 16 x 10 x 10 in. They do not seem to keep healthy. What do I do wrong; I feed on ants' eggs.

You do not say how large the goldfish are. The tank should not have more than about six and a half inches of fish. If more then you will always have trouble. Get a tank not less than 24 x 12 x 12 in., and you should have no trouble keeping the fish healthy. Ants' eggs are not eggs at all but the dried pupae. Change to one of the modern foods as advertised by dealers in *The Aquarist*.

I have a pond in my garden and during the summer a quantity of scum used to appear on the surface of the water. After rain it disappeared but came up again after some time. What is it and what can I do about it?

The scum is caused by something, either decaying vegetation or uneaten food, which decomposes and has a lot of gas form around it. When the water warms up this scum rises to the surface. The only way to have cleared this away would have been to empty the pond and give it a thorough clean out. Next season do not over-feed with dried foods.

I have to move house shortly and wonder if I could make a pond at this time of the year? Also can I keep my coldwater fishes indoors for a time?

You could make a temporary pond at this time of the year. An easy way would be to get a sheet of heavy-gauge polythene and make a hole in the ground for it. This should last until you could make a more permanent one. To keep coldwater fishes indoors you will have to see that they have plenty of swimming space. You need not feed them as long as you keep them in a cold position. The

colder you can keep them the better will it be for them. The water will hold more oxygen than when it was warmer and the fishes will not move about much and so need very little oxygen.

I have bred a large number of goldfish fry this last season but have lost all of them in about a month. I fed them on a liquid fry food but they kept dying at about ten a day until I had lost them all. What went wrong?

It is difficult to make a guess as to why the fry died. There are several reasons why this should have happened. Most liquid fry foods are only intended for the first few days when larger foods must be given. Perhaps you kept them on the fry food too long. They may have been over-crowded in the tank with insufficient oxygen. They may have been attacked by gill flukes and this would soon clear them off. Sometimes if the water is impure the fry will develop a kind of fungus on their gills and soon die after this. This state can often be rectified by adding some salt to the water. Do not give much, about a teaspoonful to each gallon of water should be enough. Before adding any salt make sure the water is in good condition, and if not change it at once.

I have a fantail goldfish which has its fins all closed and it lies on the bottom of the tank. What is the matter with it and the cure?

The fact that all the fins are closed signifies that the fish is in a bad way. Its condition may have brought on an attack of swim bladder trouble. With this latter trouble, the fins do not often fold and the fish appears to be quite well in itself except that it cannot keep its balance. Your fish may be suffering from bad conditions in the tank. This would soon upset it and it would become an easy prey to diseases. Go over your whole procedure and examine all details of the tank, water, plants, etc., to see if you can pin down any factor. Goldfish do not just fall ill for no reason and a properly run tank should never start any trouble with its inhabitants. See that you have no more than an inch of fish to each 24 square inches of surface area. See that there are no harmful metals in contact with the water; copper is particularly dangerous. Make sure that there is no heavy tobacco smoking in the room.

Will you please advise me as to the best floating plants for a coldwater aquarium?

It is not usually necessary to have floating plants in a coldwater tank. If you have over-head lighting you will only cut out much of the light. However if you would like to have some I know of nothing better than duck weed, Lemna. This will gradually spread but can be kept under control easily. It is also a good food for goldfish and so will serve two purposes.

I have a large indoor tank with goldfish and they keep pulling up or shredding the water plants. They are two kinds of elodea. What can I do?

I never have this trouble and had my tanks set up continuously for the past 17 years. I have never had a plant pulled up. You might like to try some *Sagittaria natans*. This is fairly strong and should prove too much for your fishes. Give them plenty of duck weed to eat

when you can get it, and some Betta may give them the vegetable matter they need. See that all fresh water plants are well rooted in small plastic pots before putting them into the tank. The fishes might not be able to move them as easily then.

I have a six-week-old brood of Shubunkins. I have been feeding them almost entirely on brine shrimps. Now the fry swim up and down with a movement like *Daphnia* and some show an air bubble in their stomachs. What is it?

It may be that the fry have had too much salt through the constant feeding with the brine shrimps. It is not fatal to supply a very little salt to fry but the quantity in your water is unknown. The condition resembles that of embolism, and this gives air bubbles inside a fish. It can be caused by over-aeration, and I have known fishes suffer from it after having been placed into a tank which has been recently filled with fresh tap water driven in with great force. Try a change of food, such as mashed earth or white worm and then see if conditions of the fry improves.

What is the difference between Veiltail and Fantail goldfish when young?

The difference appears as the fry develop. When very tiny they look alike but as they take on a more adult form, between a month and six weeks, according to their rate of growth, the caudal fin begins to change in shape. The Veiltails will show an enlarged tail with more rounded ends and a lack of forking. This forking means that the ends of the caudal fin are straight or nearly so and do not have a deepish forking as is found in the Fantails. By three months of age the Veils should show a deeper body than that of the Fantails, but in some strains the body of a good Fantail can be as deep as a poor Veiltail. The dorsal fin of the Veiltail should be much larger and more rounded than that of the Fantail.

I reared one young goldfish from a pond spawning and it has been kept indoors in a living room all the winter. I would like to put it out in the garden pond and would be glad to know when to do this?

The fish can be put in the pond when the temperature of the pond water has risen to somewhere near that of the container in which the fish has been kept. The morning may be the best time to do this as the temperature of the water in the container may have cooled down. When you do move the fish let the container float in the pond for some time to give the temperatures a chance to even out somewhat. Most fishes are able to move from one range of warmth in a pond to another with no ill effects. What can harm a fish is if it is dropped from a warm carrying can into a very cold pond. This sudden shock can disturb the swim bladder and the fish can lose its balance.

I have to move home about 150 miles and have a number of pond fish which I would like to take. How can I move fairly large goldfish and orfs?

The modern method for transporting fish is in large plastic bags which are kept firm in a strong cardboard container. The bags are not filled with water and some oxygen is pumped in before the bags are sealed. Fishes will travel quite safely for long distances in such containers. You might get a dealer to advise you and lend you the containers. The orfe must not be crowded as these are the first to suffer from any lack of oxygen. The colder the weather for your move the better will the fishes travel.

The water in my pond has a murky appearance. What is the cause?

In the early part of the year the under-water oxygenating plants have not yet had a chance to grow and so assist in purifying the water. It is probably that as they grow the water condition will improve. You may have been over-feeding with dried food and the uneaten food will soon pollute the water. You also state that the pond is 3½ feet deep. I find that any pond over 2½ feet deep, unless it is also very large is more trouble to keep pure than a more shallow one. I think 2—2½ feet is ample for the average garden pond. If you change most of the water once the plants are making active growth it may remain in better condition.

Can you let me know how to breed white worms?

Get a box, a plastic one will do. Put in some damp peat to about an inch from the top. Then put a piece of damp white or brown bread on top with a few worms beneath. Now place a sheet of glass on top so that it lies directly on the peat. Cover the whole to exclude the light. Keep in a cool place and never allow the peat to dry out. The occasional replenishing the damp bread will be all that is necessary. After about a week or so the worms will have multiplied enough for you to take some out for feeding to the fishes. Once you have a good supply you can start other boxes. If the boxes used are all of the same size they can stand one on the other and take up little space. If a small knob of cheese is pushed into the surface of the peat, many worms will congregate round it and can be picked out with tweezers by the thousand.

How can I breed Japanese Koi carp?

The method of spawning is just as for the goldfish. They are a type of carp and so breed in a similar manner. Condition with plenty of chopped garden worms and then carry on as for any carp or fancy goldfish. These fish bear a resemblance to Higo but appear to be rather less deep in body. There are many attractive colours in these fishes and they have a pair of barbels like the Higo.

TROPICAL queries

Is it true that glass wool used to pack a filter can kill fish?

It is a fact that tiny splinters of glass wool sometimes find their way into the gills and intestines of fish. It is far safer to use one of the synthetic fibres such as nylon in an aquarium filter.

A few weeks ago I read a travel book in which I came across a reference to a South American catfish called a Hassar. Please give me the scientific name of this fish.

The Hassar is one of the armoured catfish. It is known to ichthyologists as *Callichthys callichthys* and is widespread over South America. It is one of the oldest aquarium fishes known, and attains about 5 to 6 in. in captivity against about 7 in. in the wild.

I have noticed quite a few hydras in my aquarium and have been told that a few species of fish will eat them. Will you kindly give me the name of a peaceful fish that will eat the hydras but not eat or molest the other fishes?

The blue gourami will eat hydras if there is nothing better available. We have also read that the snail called *Limnaea stagnalis* will help to keep hydras in check.

Continued on page 372

TROPICAL Queries

continued from page 371

One of my rosy barb's suffers from constipation, and I was told by a friend to feed it on dried food soaked in medicinal paraffin. Although the fish has undoubtedly benefited from the treatment, the surface of the water is now spotted with ugly patches of oil. How can I remove the oil from the water? Also, if there is a less messy way of treating constipation in fish I should be glad to hear of it.

You can clear the water of oil by drawing pieces of newspaper across it. As for the second part of your question, refrain from giving the constipated fish any dried food for a week or two, but see that it gets its fill of chopped earthworms, washed, minced liver (uncooked), and live *Daphnia*, all of which possess laxative qualities.

Are the tiny maggots found in toadstools and field mushrooms any use as a food for fish? If so, can you tell me a way to make them emerge from the fleshy tissues?

The maggots found in the tissues of edible and poisonous fungi make a useful food for fish. If you place a maggoty toadstool or mushroom in a saucer of water the maggots will wriggle out of their hiding places in the proverbial no time.

Please give me some tips on breeding Cumming's barb.

A tank measuring 18 in. x 12 in. x 12 in. or more is of paramount importance. It should be filled with clean water—free of all floating sediment—and maintained at a temperature of about 78° F. (26° C.). A soft, slightly acid water is recommended. The lighting should be good. Some bunches of a fine-foliaged water plant, or scalded coconut fibre, must be anchored to the bottom to hold the sticky eggs. Separation of the sexes for a few days prior to placing them together is advisable. If egg-laying takes place, the pair should be removed to fresh quarters as soon as the excitement of the chase is over. The eggs take about 36 hrs. to hatch out. Three days later the fry will be looking for food. Large infusorians, microworms, and flour-fine dried food can be given from the start.

I introduced some rather fine red ramshorn snails into my aquarium about two months ago but at the time of writing hardly one of them looks the same. Most have ugly grey fissures and pits on the shell. What is the cause of this?

We would say the water is too soft and acid for the snails. Snails need limy water to maintain their shells in fine condition.

I have just bought two *Barbus orphoides*. Please tell me where this species is found in the natural state and what length will it reach in a well-aerated, spacious aquarium?

B. orphoides is native to Thailand and Indonesia. Ordinarily this species stops growing when it reaches about 6 in. but with plenty of swimming space and the best of food it is not unlikely that it will grow a couple of inches more.

What is the temperature tolerance of the Malayan livebearing snail (*Melania tuberculata*)?

This snail, which some authorities say should now be referred to the genus *Melanoides*, has a temperature tolerance of from about 66° F. (19° C.) to 90° F. (32° C.).

Please give me some hints with regard to the cultivation of four-leaved clover (*Marilea*).

The so-called four-leaved clovers flourish best when they are given soft and slightly acid water no deeper than the tallest of the unrolled stems, a gritty, peaty compost, and a reasonably bright, but not too bright, light.

To settle an argument I should like to know how far can an archer fish spit out drops of water to bring down its prey?

The archer fish is capable of spitting drops of water for several feet, but as a rule the operative distance is from a few inches to about three feet. Within the limits of this range, the fish is remarkably accurate. The writer of this note has often been "hit" by an archer fish at a distance of about five feet.

I have a pair of the rare *Neobias ansorgei* from tropical Africa. Is it true that this lovely little characin is most reluctant to breed in captivity?

Firstly, *N. ansorgei* has been removed from the family *Characidae* and is now referred to the closely related *Citharinidae*. It is far from a ready spawner, and even when it lays eggs the fry are difficult to raise to maturity.

Is it true that if about one-third of the water in a long-established aquarium is drawn off and replaced with fresh always an improvement in the health of the fishes is obtained?

Very long-standing aquarium water does tend to become overcharged with nitrates produced by the decay of vegetation, the waste products of the fish, and so on and so on, and if this condition is not relieved by efficient filtration and/or changes of water every so often, then the health of the fishes will suffer. Commonsense, however, demands that the size of the aquarium should be taken into account when any changes of water are made. In a small aquarium only about a quarter of the water should be removed at a time. Another point to bear in mind is to run in fresh water of a type suited to the occupants of the tank, that is to say soft water for soft water species and hard water for hard water species. And made certain, also, that the temperature of the fresh water is the same as the temperature of the aquarium.

Will a spiny eel (*Mastacembela aculeatus*) prove aggressive in a community tank, and what food does it like best?

Spiny eels in their smaller sizes (up to about 7 in.) are not interested in other fishes and keep out of their way as much as possible. But large specimens of a foot or more in length are not to be trusted with any fishes that are small, slim, and therefore swallowable. *M. aculeatus* flourishes best on live *Daphnia* and worms (white-worms, slug-worms and earthworms) and tiny pieces of raw meat dropped just in front of its nose. If live food is introduced into the tank for this fish's special benefit, see that it is given after dark or else the other fishes will eat the lot before the spiny eel has a chance to emerge from its hiding place.

Please give me some information about the likes and dislikes and breeding procedure of the black phantom tetra (*Megalanchanna nigropinna*) from Brazil.

There is nothing very special about the black phantom tetra. Provided you give it soft, neutral to acid water, a temperature range of from about 72° F. (22° C.) to 78° F. (26° C.), and the usual live and dried foods, you can hardly go wrong. It is quite a ready spawner and deposits eggs on bunches of nitella, milfoil, and the like, or suitable substitutes. The eggs hatch within two days but, as with so many other tetras, too much light and bacteria-breeding debris on the bottom will spoil the chances of success.

I have been told that the Australian rainbow fish (*Melanotaenia nigricans*) may be kept and bred outdoors in this country. Is this correct?

About the end of May, when all danger of frost is over, and provided the fish have been gradually accustomed to living at temperatures in the sixties (°F.), an outdoor pool,

deep in the centre for extra protection against a dangerous drop in the temperature (some May and early June nights can be very cold), may be used for keeping and breeding *M. nigrans*. If all water snails are cleared out and no other fishes are present and there is a tangle of plants such as callitriche or potamogeton growing up from the bottom, there is every hope of netting some well-developed fry before September is out.

Can your experts tell me anything about the sickle barb?

The sickle barb is a diminutive barb from East Africa. you will find it described under the scientific name of *Barbus* or *Puntius wöhlerti* in some up-to-date reference book. It has been known to German aquarists since the 1930's. It has barbels, it eats anything, and although it will breed in captivity, it is not a ready spawner. It is prettily marked with a purplish to violet stripe along the translucent greenish to brownish sides.

Which is the true gold barb, *B. schuberti* or *B. gelius*?

Strictly speaking, Schubert's barb is more entitled to the common name of golden barb than *B. gelius*; for *B. gelius* is only bright gold under reflected light. But as *B. gelius* was given the common name of golden barb long before Schubert's barb came on the market, then, presumably, *B. gelius* has prior claim to the title. But mention of names raises the interesting question that, perhaps, the fish said to have been developed from a gold coloured sport of *B. semifasciatus*, to wit, Schubert's barb, is not a man-made fish at all, but a little known species of barb from the Malay Peninsula, with the scientific name of *B. sachi*. And one thing more, it is wrong to allude to a "man-made" fish by a scientific name.

I am a beginner in tropical fishkeeping and have just set up a small tank and stocked it with a trio of black mollies. When may I expect the first batch of fry?

You may expect some fry some eight weeks after the male has performed his duty. But mollies, unlike so many other popular livebearers, often go for several weeks without producing young. A point to bear in mind, too, is that mollies breed fastest when they are given plenty of swimming space in slightly saline water maintained at a temperature of about 77 F. (26 C.).

A member of my local club told me that some barbs of the tropics grow so large that it would be impossible to accommodate them in a home aquarium. Can you give me any idea as to the size these monsters grow?

The largest barb that we know of is *Barbus tor*, the mahseer of India. This fellow grows to a length of 6 ft.

Could you give me the name of a puffer fish that will behave itself in a community tank?

The attractively marked puffer fishes known under the scientific names of *Tetraodon schoutedeni* and *Tetraodon* or *Carinotetraodon somphongsi* are well suited to a community tank because they do not need salt in the water, are easy to feed, do not snap at other fishes, and do not grow much larger than 2½ in.

Why is it necessary to allow tapwater to stand for a while in a newly set up aquarium before introducing any fish?

It is not absolutely necessary but it is certainly advisable to let mains water stand for a few days before placing any fish in it; for during the process of pouring and ageing piped water loses the chlorine it starts out with to destroy bacteria inimical to the health of human beings.



Fresh eggs for fishes

by Leon Thorn

HAVE you ever come across an ant's "nest" in the garden and wanted to see the so-called "eggs" as a nice little tit-bit for your fish? Unfortunately, more often than not such a "nest" is disturbed whilst digging and it is a tedious task to separate the eggs from the ants and the soil.

However, why not make the ants work for you? For want of a better method which I have not yet discovered, this is how it can be done: using a small trowel, spread the whole colony comprising ants, eggs and soil on to a flat surface such as concrete path, wooden board, or, perhaps best of all, the household shovel. Next, clear a small area in the centre of the mass and into this space put a small cover such as a small box lid or tin lid—though not one smothered of shoe-polish—in which two or three tiny entrances have been made in the open edge. A light tap with a hammer is often sufficient. You will then be surprised how quickly the ants will find this new hiding place and frantically carry their precious embryos under "safe" cover out of the light. As soon as all the eggs have been deposited, the thief of a fish-keeper lifts the lid and scoops up the eggs with a spoon!

Snaring the ensnarer

Another occasional source of "fresh eggs", also to be found in the garden or the countryside, are the spiders which jealously nurse their eggs in a large white silken-covered ball. These are usually found in old walls, bank-side cavities, or in crevices under flat stones. If you are quick you can catch the speedy spider and carefully relieve it (let's not say snail) of its cocooned eggs and the silken cover can be carefully peeled off over the top of the fish tank. Several hundred tiny but highly acceptable eggs will then drop into the water.

Other species of web-building spiders' eggs are also to be found in corners of the garage or garden shed. These are more loosely cocooned and, though inclined to be "sticky," can sometimes be lifted away from the crevice with a penknife blade and then opened over the top of the tank.

Since all our native spiders at least are acknowledged to be friends of man, it is not suggested that you specially hunt them out for the purpose of pilfering their eggs, but I think the enthusiast can be forgiven for snatching the opportunity when the occasion arises of providing a little change of diet for his fishes.

Over forty years of fishkeeping

*Mr. Alfred ("Nicky") Rous
of
"Queensborough Fisheries"*

.....



HIS first aquarium was a tin cabin-trunk. He acquired several more, all set out in the family garden, and five-years-old Nicky Rous was on his way to becoming an ardent aquarist. Then came a biting frost; the trunk-tanks were frozen solid and a small boy was wildly distressed until his parents and brothers saved the day, the fish, and his sanity by carrying the trunks indoors and thawing them out in front of the fire.

Alfred Rous has never forgotten that incident throughout his forty years of fishkeeping, which have brought him to a prominent place among the English aquarium authorities. His two retail shops in London and his extensive fish farm at Wraysbury are evidence of his success as a businessman, but he insists that this was never his purpose. Commercial success came naturally and almost unconsciously as a consequence of his passionate interest in

fishkeeping, indeed in any and every aspect of nature-in-growth.

Passionate? Not too strong a term for the quiet man of professional bearing who will take infinite pains to care for the tiniest guppy, stop in his tracks to tend an apparently ailing fish among the thousands in his care, and raise the roof at London Airport when a consignment of tropicals has been delayed and the fish are suffering.

Long before the early agony of the frozen trunk-tanks he was absorbed in living things and his earliest ambition was to have a farm or a zoo. A manageable alternative at that early age was fishkeeping, and at the age of eight he was breeding goldfish and operating his own barter system, swapping the excess fish for marbles, conkers, and other juvenile treasures.

At fourteen he met a man who was to have a strong influence on his future, and who channelled his natural interests on to a clear course. He was Mr. Van Hal, a Dutchman with a tiny shop in the Portobello Road and one of the first to introduce tropicals into the country. He was also the pioneer of the cylinder-type heaters that are now widely established. Nicky Rous was a regular visitor to the Van Hal shop, bringing supplies from his own growing aquarium and taking away new specimens and a fund of expert knowledge from his mentor.

The 'teen years brought steady expansion in stock and know-how, and the beginnings of his business began to take shape—though he was still essentially an aquarist rather than a businessman. These were difficult days, when fishkeeping was limited to the common types. Neons and cardinals were rare, and the range of appliances rather primitive by to-day's standards. Nightlights were used for heating the tanks, which were mounted on shallow boxes with a glass panel. The nightlight was placed inside, and heat control was a matter of raising or lowering the light, or adding more of them in cold weather.

The war put an end to the first phase of this promising career. Nicky Rous disposed of his collection, went off to active service, and returned with a handicap of war

Mr. Rous takes a visitor around the attractive ponds in the gardens at Wraysbury





injuries to find that his horse had been bombed out. He went to live with his aunt at Queensborough Terrace in Bayswater, unaware that he was to take the name "Queensborough" and make it a household word as the title of his well-known fish farm at Wraybury and of his business.

It all began again with a birthday present from his aunt—three pairs of fish, including a swordtail, bought from his old friend, Van Hal. He began to breed goldfish, supplementing his stock with the progeny of some old favourites. In disposing of his fish before the war he had presented a number of gold fish to the keepers of the sunken gardens in Kensington Gardens. They had multiplied magnificently during his absence, and the keepers were only too pleased to return the favour.

This was a time when goldfish were almost unobtainable, and there began a thriving business in a basement room of the house in Bayswater. He was soon producing some 5,000 fish each week and that busy basement aquarium is still remembered by many of the enthusiasts who crowded into it. Among them was Mr. Charles Schiller, the "Father of Fishkeepers," who would buy up to two thousand fish in a single visit.

Prices were high in those days. Neons sold for £5 each, Angels 25s., Tiger Barbs 12s. 6d. Nicky Rous began to specialise in Widows, and soon became known as "The Widow King". This species was selling at 5s. each

Visitors are fascinated with the variety of fish and plants to be seen at Queensborough House. Here Mr. Raus and his staff introduce a group to one of the attractions in the ponds

to the wholesale trade, and in the general buoyance of business the shop in the basement began to burst at the seams. The next step was the opening of the first of his retail shops in Shepherds Bush, followed soon after by the second in the West End.

The third and major development came twelve years ago, when the charming riverside property at Wraybury was acquired and given its new name of Queensborough House. This delightful area of seven acres, with its century-old home and outbuildings set in the woodlands fringing the Coln Brook and the Thames, offered an irresistible challenge to its new owner. How that challenge was met and mastered is to be seen at Queensborough to-day, with its great fish-houses, ponds, hatcheries, and the many other attractions that bring buyers and visitors thronging to it every week-end. Whatever the weather, they come in their thousands and it is no novelty to see husbands carrying their wives through the deep snow down Ferry Lane to the fish farm.

The kiddies come eagerly, too, for there are other favourites besides fish. There is Ko-Ko, the impish

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Over forty years of fishkeeping

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little monkey; David, the donkey; there are lambs, birds, and in summer there are peacocks preening and posing on the lawns, where picnic tables are set out under the trees and from where visitors may take a boat on the river. Soon it is hoped to have a licensed restaurant, and other amenities are being planned to make a visit to Queensborough even more memorable.

Talking with Alfred Rous at his Wraysbury home, as I did, leaves no uncertainty concerning the man and his philosophy. He is positive in opinion, dedicated in purpose, and deeply involved in the pattern of living things.

"I'm fortunate," he said, "I seem to have an affinity for growth. In the garden I stick in a twig and it thrives; I breed fish and they multiply; I follow a natural inclination and it builds up into a large business. Commercial expansion has never been a deliberate aim; it's the outcome of a natural concern—an instinct, if you like—for everything in nature that grows. I sometimes wish I could cut loose from it, but I can't. People say I own Queensborough Fisheries, and they're quite wrong; it owns me, and I'm simply the keeper of everything here."

He has no hobbies, few other interests beyond the activities that keep him busy around his fisheries. His

A delightful corner of the gardens at Wraysbury gives "Cocky" the right setting in which to preen before an admirer. Other favourites with young and old include a donkey, a monkey, a lamb, and in summer there are peacocks.

concern is always for these living things, whether it is in raising the aquatic plants which he sells by the ton, or in hand-feeding the fish in the ponds where they come to him quite readily. ("The Italian fish are fed on spaghetti—they love it.")

He dislikes the sudden booms that sweep into the aquarium trade when fishkeeping becomes a fashion and fish are tumbled into tanks to meet the demand, with little regard for their quality and condition. Poor fish kept in make-shift conditions will die, he pointed out, and the public become disillusioned and their interest dies too. He is strongly in favour of holding fish back from sale until they are well established and free from disease, and of ensuring that when fish are sold, the necessary information for keeping them healthy goes with them. In this respect he is kept busy answering queries and solving problems from people all over the country.

A visit to Queensborough Fisheries is an enchanting experience for anyone of any age; for the aquarist, it is an education and an inspiration to browse around this huge collection and to talk with the man to whom it has been a complete fulfilment for over forty years. W.J.Y.

What is your opinion?

by B. Whiteside

A NUMBER of letters were late in reaching me because of some delay in the Christmas mail so I am including these in this article.

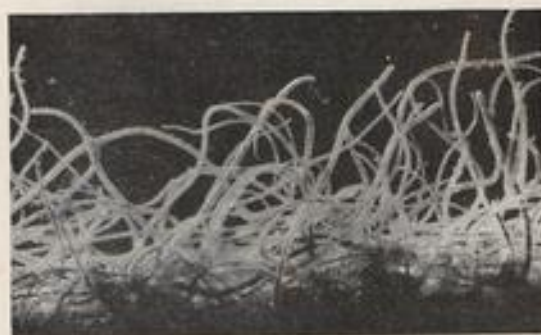
The letters concerned live foods and plants for the cold water aquarium, and Mr. M. A. Conroy of Bournemouth, Hants., says that there is always the possibility of introducing water enemies and diseases into the aquarium with *tubifex*, *daphnia* etc. However, Mr. Conroy's favourite food for the fish is *tubifex*. He supplements this with *daphnia* and young guppies when they are available. Mr. Conroy thoroughly washes the *tubifex* under running water, for a few hours, and then puts a quantity of methylene blue in with them, overnight. This, he finds, keeps a lot of pests and diseases out although it is not foolproof. He also finds it advisable to keep some loaches or catfish in tanks where *tubifex* are fed, so that they can ferret uneaten worms out of the gravel.

Being a town dweller, Mr. I. W. Gray, of Hull, can only get live foods which he grows himself, or buys from his local dealers. *Daphnia* he finds best, being free moving. As he specializes in Characids which, he says, are mainly middle tank swimmers, the *daphnia* stay in the middle water longer. Mr. Gray also feeds *tubifex* and whiteworm but some always reach the bottom where they dig into the gravel, die and decay, thus spoiling good tanks.

From Newcastle, Staffs., Mr. D. S. Woodvine writes to say that earthworms are greedily eaten by all fish large enough to take them. *Tubifex* are also eaten and Mr. Woodvine's fish have had no trouble with sores or boils. *Daphnia* are eaten by his smaller fish but fish of 4 in. or over do not seem too fussy, probably because too many *daphnia* have to be eaten for a good feed. Whiteworms are taken by fishes of all sizes but Mr. Woodvine gets some cloudiness in the water from the breakfast cereal on which he feeds the worms. All of his fish seem to grow very well on this diet plus a good dried food.

Mr. P. Fountain, of Somersham, Hunts., gives the sensible view that there cannot be one live food suitable for all sizes of adult fish. In his opinion, brine shrimp and cyclops would be very suitable for small species or those with small mouths. *Daphnia* is suited to the majority of average sized aquarium fish. For larger species such as Cichlids, mosquito larvae and phantom larvae are more bulky and satisfy larger appetites more easily than smaller live foods. Mr. Fountain does not use *tubifex* because the worms are found in such dirty places, and he thinks that they are possibly the cause of quite a number of the mystery deaths in aquarium fish. Although he has not used them, Mr. Fountain thinks that maggots and mealworms would seem to be suitable for very large fish.

Brockenhurst, Hants., is the home of Mr. D. Letts, who writes about coldwater plants. He thinks that the main problem with the coldwater aquarium is to find a long rooted plant which can, when properly planted and established, resist the attempts of the fish to uproot it from the



Tubifex

gravel when the fish feed from it during normal food hunting. A good way he finds, is to plant an *Elodea* or *Cabomba* weighted with lead. These plants will grow rampantly without rooting and a good depth of gravel, plus the lead, succeed in keeping the plant in place. He has used *Sagittaria* with reasonable success but the shallow planting necessary for this plant is an obvious difficulty. Mr. Letts has recently acclimatised a giant Amazon sword from the tropical to the coldwater aquarium and the Fantails and Shubunkins are having great difficulty in digging it up. He goes on to say that people seem to think that plants in a coldwater aquarium will grow without lighting, but in fact they need the same as their tropical counterparts. The writer of the letter goes on to ask why people shy away from the coldwater side of the hobby. "Perhaps because it does not seem so glamorous?" he asks. He goes on to say that the tropical enthusiast would be quite surprised with, for example, a couple of pairs of veils, fantails or moors in a reasonable sized aquarium, preferably with filtration and those deep rooted plants. Mr. Letts ends by asking if anyone can solve the problem of keeping a kingfisher away from a garden pond, without using netting?

Postal Services for the aquarist and filter media were the subjects for discussion for this article.

Sixteen years old Anthony Coles from Maidstone, Kent, has written to many firms which advertise and has found that he can judge a firm by the number of days the firm takes to answer his letter. He grades firms thus: by return of post, or after a few days—an interested, efficient firm; after a week—unless a satisfactory excuse is offered, an uninterested firm; after a fortnight—unless a really good excuse is offered, the firm seems very rude, especially when many ask for a S.A.E. Master Coles also judges them by the amount of information they supply. He states that interested firms give full details even without being specifically asked and that uninterested firms do not.

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What is your opinion?

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He usually finds that goods are sent by return of post, if he orders something, or that if an item is out of stock, that he receives a note to this effect by return of post.

Mr. D. R. Hubble, of Sheppey, Kent, receives large numbers of fish from a well known "Victorian" firm and is satisfied. He points out that anyone who expects one hundred fish picked by any shop, to compete with four to six fish picked by ones self is a fool. He expects the odd fish to have travelled badly. On the question of filter media, Mr. Hubble writes "NONE". He favours decorative tanks and will never admit to the necessity for artificial filtering or aeration in the "balanced aquarium." He has kept tanks containing only burrowing snails and has often done without these. In sixteen years, he is convinced that balanced and correct feeding is the secret. He does say, however, that in tanks kept for reasons other than aesthetics, the filter is often the only solution to the problem of cleanliness.

Mr. S. Goodwin, of Congleton, Cheshire, says that he obtained virtually all of his equipment from postal firms and has never had a complaint to make. He also obtained all kinds of advice and has profited greatly from it. He thinks that the competition for orders from the postal firms keeps them up to scratch, unlike some pet-shops. He is not using any filters at present as he has a lot of plants which seem to keep his tanks clean enough. When using outside filters he uses nylon wool, carbon and aquarium gravel. He thinks that far too many people rely on filters and says that quite a few plants could be bought for the price of a decent filter. He has only really had to use a filter with cold water fish which kept uprooting the plants, but thinks that his tank may also have been overcrowded.

Mr. P. Brown writes from St. Helens, Lancs, and suggests that we should think about which filter material would be best for our type of filter. Glass wool is all right, he says, but it tends to disintegrate when boiled or washed. Nylon wool, he thinks, is the best medium as it does not clog easily and can be boiled and washed many times. He never uses peat in the filter as he thinks that it is of greater benefit to the plants, under the gravel. He also uses charcoal to remove unwanted gases from the water. He suggests that charcoal and carbon should not be used if one wants brown water to stay brown. He also informs us that a branded make of filter medium is extremely useful for its purpose in both salt and freshwater tanks.

Mr. G. Wayht, from Midhurst, begins his letter by saying that he lives "in the wilds" and must depend upon the post for everything. He finds that he gets a very good service indeed from advertisers in *The Aquarist* but finds that some do charge a little on the heavy side on postage (Very true. B.W.). He had some trouble with a heater/thermostat unit and could have been in real trouble but a letter to the suppliers got him a new unit by return, without any request to see the faulty one, thus saving his tank of fish. He finds one large firm very good for delivery of fish by post and rail.

Mr. E. J. Thompson, of Barton-on-Humber, Lincolnshire, finds that the letters sent by readers to this feature, are a veritable mine of information as he is a novice.



Daphnia

When he started the hobby he wrote to several firms enquiring about tanks, plants, heaters, etc., and without exception, he received replies within four days. Each reply was very explicit and extremely helpful. Items later ordered arrived without delay except for the tank and hood which took British Railways ten days to deliver. Mr. Thompson was much impressed by the service and help given by the firms and will order from them again as he sets up more tanks. He does not use filters as he does not think them necessary in his thirty gallon tank. He has a large collection of plants and uses gentle, continuous aeration which, he finds, leaves his tank needing little maintenance.

The following are some questions, sent in by some of the above letter writers, for answering in the next "What is Your Opinion?" :-

- (1) What do you understand by the word "Calaree" as applied to our hobby? (Asked by Mr. Hubble.)
- (2) What conditions do you provide for your Discus?
- (3) What do you think of freeze-dried fish foods? (Both asked by Master A. Coles.)
- (4) What type of artificial lighting do readers find most beneficial to their plants?
- (5) Have you found that some aquarium plants do not grow, or die off, in the presence of others? (Both sent by Mr. E. J. Thompson.)

Please send your opinions on the above subjects as soon as possible, and print your name clearly on your letter. Letters arriving too late for publication may have to be omitted or held over to a later issue.

Setting up a furnished tank for competition

by A. Boarder

*Hints on design, size,
rocks and compost,
choice of fish and plants
and show preparation*

THE furnished tank will always be the most outstanding feature of any aquarist show, especially for the ordinary visitors who may not be dedicated aquarists. A row of well set-up tanks is a great attraction and will generally have a small group of admirers constantly around such tanks. The first British Aquarists' Festival at Manchester in 1951, had a splendid row of furnished tanks which proved a very big attraction and was one of the finest collections of such tanks I have ever seen. There was plenty of variety among them and one or two of rather exceptional design. I well remember the one which had a very realistic impression of a cave complete with stalactites and stalagmites; unfortunately, when the heater was switched on the candle grease, with which it was made, melted and the whole tank became a thorough mess.

One still sees a few unusual designs as some exhibitors are rather impressed by the fact that five points can be allotted for originality. This could be carried too far as if one tried to imitate a village pond and displayed an old boot in the tank, this might not find favour with the judges. Nowadays, it is rather difficult to find something really original which is likely to be accepted and so it may be better to stick to a more formal design and concentrate on obtaining the finest living picture possible.

Before entering for such a competition one must make enquiries of the society as to the size of tanks to be used. This is most important. There are two sizes usually found and they are provided by the society. They are the 24 x 12 x 12 in., and 24 x 12 x 15 in. The latter, being deeper, is to be preferred to the former as it enables one to use much better specimens of plants. If the size of the tanks is not known beforehand one could take plants which were too tall for the smaller tank.

Some societies provide compost but I would always recommend the exhibitor to take his own. I consider that

to have a badly matched compost is a sure way of not only spoiling the whole effect but it will usually mean the loss of marks. Also it is most essential that the compost should be thoroughly clean as once the tank is filled with water, some of the fine material in the compost could cloud the water and again lose valuable points. Not only this but many tanks I have seen have had such a bad contrast of colour between the rocks and the compost that the first impressions are fatal, and the judge would not award such a tank many points for general appearance or for rockwork and compost.

Before the show, any compost to be taken must be cleansed well and the rocks inspected closely. Any sharp points or edges must be removed and the scrapings might well be used to lay on the compost near the rocks to give a natural decomposed look. Rocks are not compulsory in the tank but I have rarely seen a really attractive tank without one or two well seasoned and coloured rocks. No rocks of a limestone nature should be used and a good weathered Westmorland rockery stone type will often be a very good choice. Where the rocks have a distinctive colour it is well to provide a base compost which is in keeping and if not quite matching in colour it can be rendered so by broken pieces from the actual rocks. I have seen some composts which are composed of many tiny pebbles in soft tones and this has added to the general picture considerably.

The rocks and compost having been decided upon, it is now necessary to choose the plants most suitable for the general set up. Points are awarded for the choice of plants but this does not necessarily mean that the more kinds there are the higher will be the number of points awarded. When choosing the plants, try to include those of differing colours, such as pale green, dark green and reddish or brown. With the right choice of plants, rocks and compost it is possible to complete a perfect picture so that when the fishes are added the whole set up will be most attractive. Sometimes the type of plants can be chosen to suit the fishes which are to be included and certain fishes may look best in a tank with plenty of tall narrow-leaved plants such as *Vallisneria* or *Sagittaria natans*. Your choice of plants should include some strong growing types such as *Lagarosiphon major* to hide the back corners of the tank. Some shorter types can be placed in the mid-distance with a few small growing ones for near the front of the tank. This front planting must not be overdone as such plants could hide the beauty of the rocks or prevent the fishes from getting swimming space.

The fishes to be used in the exhibition tank must be carefully chosen. It is not always beneficial to include many different species and some of the most attractive

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our readers



write

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

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

Piranhas

I WAS surprised by the advice given in the January issue not to keep two piranhas together. My husband and I purchased two piranha fry at the Belle Vue exhibition in October, 1966 and since then the two fish have been constantly together without damage to either. It is interesting to note that they have dug into the gravel in a rear corner of their tank deep enough to expose the under gravel filter and there they spend a great deal of time motionless. Their food (chopped meat, tubifex and white worms) is dropped thrice daily onto a piece of slate at the front of the tank over which they take turns to hover—they are never out in front together but alternate between the hole at the rear and the slate at the front. Algae is a problem as they eat snails—in fact they attacked a giant Australian snail we introduced to try to cut down the algae and it had to be removed from the tank. When any attempt is made to clean the tank they become most agitated and, after swimming madly back and forth some-

times hitting the glass, they go into a sort of catatonic trance lasting up to three hours.

I would be most interested to hear from anyone keeping these fish.

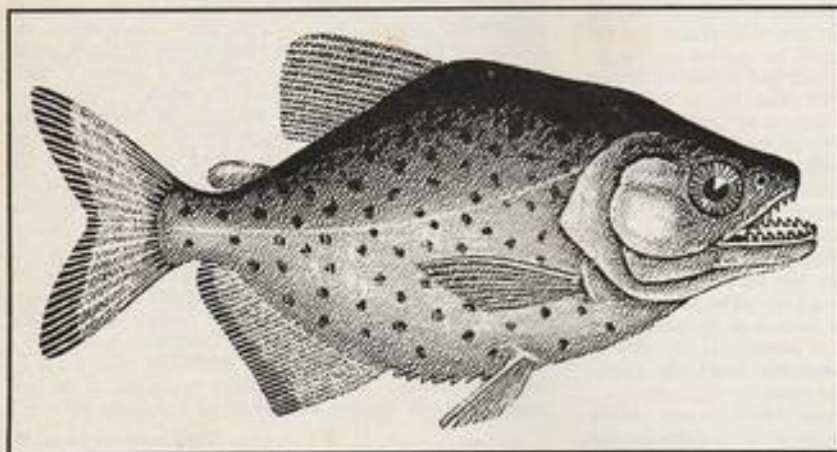
MRS. S. ARROW,
Ipswich, Suffolk.

Can you help?

I AM very sorry to hear from you that the January, 1968 issue is already out of print. I would like to receive a letter from any of your world-wide readers, telling me that they are willing to post me the January issue, 1968. I am willing to pay for the issue, and its postage.

Hoping to hear from any of your readers, telling me that they do not need it any more. I would reply to the first letter received.

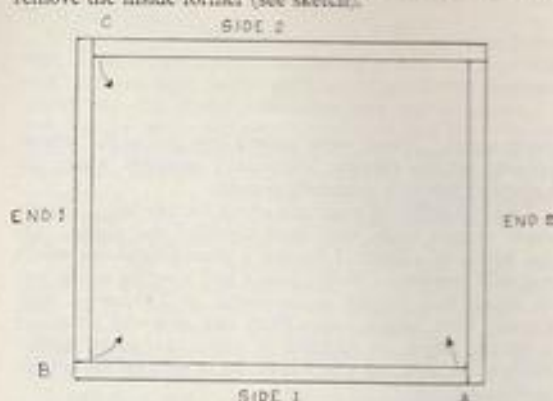
Yours faithfully,
JOSEPH JOHN MIELI,
"Pat House," Church Street,
Paceville, St. Julians, Malta.



Spotted Piranha

Concrete Tanks

WITH reference to Mr. A. Boarder's article on concrete tanks, I would like to point out an easy method to remove the inside former (see sketch).



If side 1 is prised inwards at point A, followed by end 1 at B, and side 2 at C, and finally end 2 will fall out. This may seem rather complicated but this is the usual method used in shuttering and would prove beneficial when constructing a large tank.

After reading some four other magazines I find yours very interesting and informative.

E. MYER,
Newport, Mon.

Lemon-Finned Barb

THROUGH the year I have followed with interest the "Champion of Champions" Contest. At Manchester like thousands of other Aquarists, I looked in awe at the magnificent winner, the Lemon-Finned Barb belonging to Mr. Bill Parkin.

One thing, however, mystifies me, I can find no reference to this fish in any of the more usual reference books.

Please publish the scientific name also some details of its characteristics.

Yours faithfully,
D. R. LELLIOTT,
St. Albans, Herts.

We have directed enquiries concerning the specific name of this fish to the British Museum but from the evidence supplied by us in the form of a photograph of the Champion of Champions, that establishment has not been able, so far, to supply any specific identification but would welcome the receipt of a live or dead specimen to further their research.—EDITOR.

Annual Fish

SO-CALLED "annual" fish (*Aphyosemion* spp., *Nothobranchius*, *Cynolebias*) are probably the shortest-lived and most rapidly-aging vertebrates. For this reason they have become important for research into the nature of age processes. This Group would very much like to recruit the help of aquarists in constructing survival curves for males and females of any species in these genera.

Ideally, we would like anyone who rears a sizeable brood of killies to observe them until natural death, recording the sex and date of death of each individual, together with other details (whether bred from, tem-

perature, diet). Fish lost, sold, or otherwise excluded should be recorded, with the dates when this occurs.

If anyone who breeds and raises species of the genera named would care to help in this study and would contact me, I can provide full instructions, answer questions about the research, and draw up recording blanks. I feel sure that employment of their special knowledge in the interest of a research which involves no interference with the fish will appeal to many aquarists.

Yours faithfully,
ALEX COMFORT, M.B., D.Sc.
Director, MRC Group on Aging,
University College, London, W.C.1.

Fish Food Prices

IT is not often that I am aroused from my usual lethargy by a subject I feel should be given an airing, but the continual rise in the cost of prepared fish foods is really getting my goat. Recently, one such food, Tetra-Min, was increased by 1s. 5d. on a two-ounce carton, the 7s. 6d. size rocketing to 8s. 11d. I realise that this brand is an imported food from West Germany, and would therefore expect an increase due to the devaluation of the pound. Like many other folk I was assuming that the devaluation of British currency was 14 per cent. and so expected a rise in the cost of this food to be in this region. On a glance at the above figures it will be noticed that the above rise in price was more like 20 per cent. Now I would dearly like to know how the manufacturers and the distributors (Messrs. Herb-Royal) justify this fantastic increase. Admittedly this food is of an excellent quality, but I cannot accept that any animal feeding stuffs can be costed at the colossal figure of £399 9s. 4d. per cwt. or the astronomical figure of £7,989 6s. 8d. per ton, surely the world's most costly animal food.

Yours faithfully,
A. J. WRIGHT,
Bwlch, Breconshire.

EDITOR'S NOTE: Our reader's letter was referred to the manufacturer concerned, Messrs. Herb-Royal Ltd., and they have replied as follows:

Because he knows that the goodwill and trust of his customers is the most important factor in any business no manufacturer will willingly increase prices.

It was with the utmost reluctance that prices in the TetraMin range were increased, and these increases, which were kept to the absolute minimum, were the direct result of the devaluation of the £ sterling.

The £ was devalued by 14 per cent. which means a loss of 12 per cent. on our original basic price. In order to compensate for this, basic mathematics state that 14 per cent. off is the equivalent of 16.666 per cent. added, this is a fact of devaluation which does not seem to be generally realised.

To this must then be added the proportional increase in freight, dock and customs charges, and duty is then calculated on the overall landed price.

The percentage of 7s. 6d. to 8s. 11d. is in fact only 18.888 per cent. and not 20 per cent. as suggested by your correspondent.

To quote figures per ton is surely irrelevant. Any consumer knows that to buy in bulk with virtually no packaging cost involved would be very much cheaper than to buy in two-ounce containers.

A living coral aquarium

by D. W. Sanderson

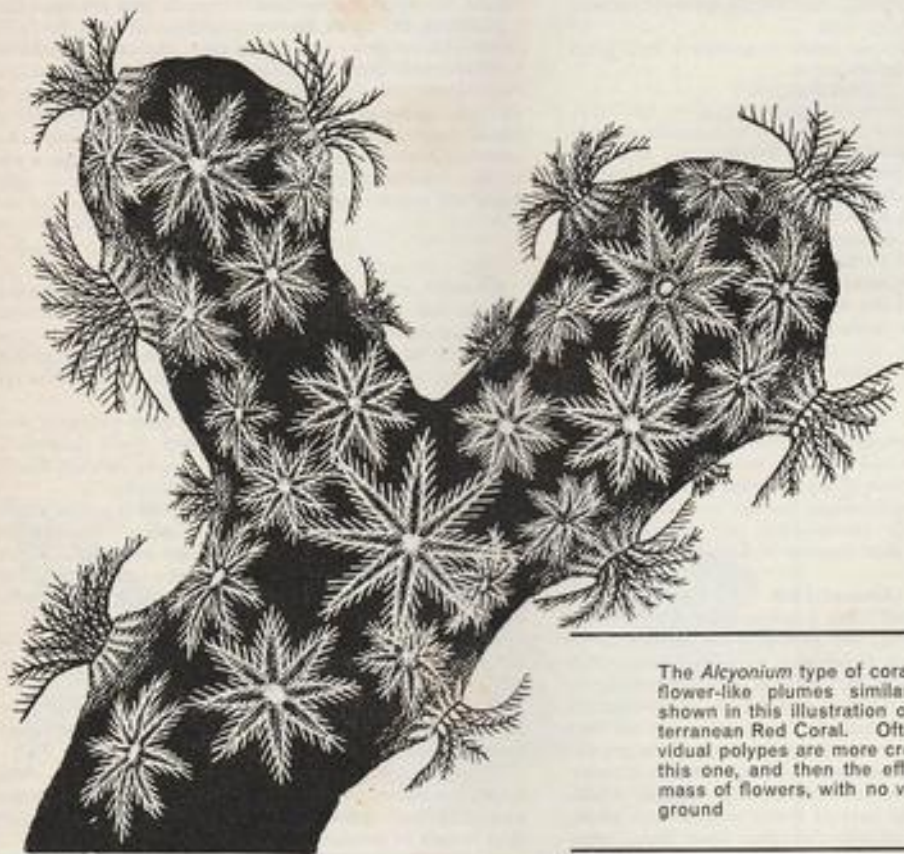
AFTER serving for three years in Cyprus with a British Army School, during which time I kept two tanks of Mediterranean fish (*Aquarist*, Feb., 1964) I was transferred to Malaya at short notice. Apart from relief at getting away from an increasingly unpleasant situation in Cyprus and the prospect of being reunited with my evacuated family, thoughts of future marine aquaria were already in my mind.

Kuala Lumpur, to which I was posted, is only twenty miles from the sea, but seventy miles from the nearest coral reef where I hoped to catch my fish. However, it had other advantages, as I was soon to learn. Whereas in Cyprus I had been working completely alone, without even a shop from which to buy equipment, in Kuala Lumpur there seemed to be an aquarium shop on nearly

every street. These were owned and patronised almost entirely by the Chinese community amongst whom the aquarium hobby is extremely popular.

I had no difficulty in getting a tank for marines. Locally made cement tanks were both plentiful and cheap. On the advice of a dealer I bought a second-hand one which was well seasoned. Before long I had it set up in the way in which had proved so successful in Cyprus—a large outside filter taking water from one end and returning it at the other, an airstone to make the water surface really move, and just a bare covering of sand on the bottom of the tank.

In this first set-up I used rocks which had been carefully cleaned and sterilised. I tried curing my own coral pieces, but the first two attempts were complete failures



The *Alcyonium* type of corals open up flower-like plumes similar to those shown in this illustration of the Mediterranean Red Coral. Often the individual polyps are more crowded than this one, and then the effect is of a mass of flowers, with no visible background.

and resulted in the loss of several fish within a very short time. I eventually managed to make the now "clean" coral safe, by soaking it in bleach for a week, and then soaking it in fresh water which was changed every day for a fortnight.

It was on my coral collecting and fishing expeditions that I was struck by the fascinating beauty of the living reef. There was no comparison between this intricate world and the sterile affair that was my aquarium. I just had to take some coral home alive and try it in my tank. I collected some small pieces of *Goniopora malaccensis* and transported them in a wide polythene bowl, being very careful to see that they did not knock against each other. The tank was in perfect condition when I put them in, but they were all dead within a week.

When I set up a second tank I tried the living coral again in freshly collected water. This time it lasted two weeks. Replacements in the same water lasted only three days. As corals are plankton feeders it did seem rather unreasonable to expect them to live in water which was going through a filter about once every hour.

I had read about the "natural method" used by Lee Chin Eng in Djakarta, but as the only communication with Djakarta at that time was via the paratroops and commandos which were being dropped on us, it did not seem to be a good time to get in touch with him. Secondly, I felt that this method was rather "chancey" and that seventy miles was too far to keep on bringing coral for experiments which seemed likely to fail.

A compromise was needed and an undergravel filter seemed to fill the bill. It would keep the water crystal clear without actually removing anything from the tank. I decided that I would first find out as much as possible about the use of undergravel filters in marine tanks before going ahead and trying one. I consulted all the books and magazines at my disposal and wrote numerous letters.

The following extracts summarise my findings:

"I see no reason why an undergravel filter should not work in a marine tank".—Dr. Wilson, Director of the Marine Biological Association.

"Sub-sand filters are to be recommended, since they do both jobs at once." (i.e., aerate and filter).—J. S. Vinden, F.Z.S. in the Pan Book of the Home Aquarium.

"Sub-sand filters may be used, but in addition I would use a good outside filter".—Alfred A. Shultz in T.P.H.

"Sub-gravel filters must never be used".—Leaflet published by Tropicarium, Frankfurt.

"First, use an undergravel filter and cover it with several inches of medium-coarse beach sand".—Bob & Don Morris, Fish exporters of Hawaii.

It was not until much later that I discovered that the clue to success lay in the last three words of Bob & Don Morris. Sand, not gravel, must be used with these filters in a marine tank. This means that waste material will collect on, not in, the sand and can easily be cleared away with a sediment remover.

My new set-up with the sub-sand filters worked well and the corals I collected seemed to thrive. After several attempts to feed them, I discovered that they were feeding themselves on the live food intended for the fish. This consisted of daphnia and mosquito larvae at first, and later brine shrimp, when dried eggs became available in the shops. Of the three, freshly hatched brine shrimp turned out to be the best.

Corals for the aquarium

The best corals for the aquarium are those which have large distinct polyps whose activity can be clearly seen. Not only can the aquarist examine the individual polyps and watch them feed but their state of health is at once apparent, and any sickly specimens can be removed at once. These corals belong to the genus called *Goniopora*.

G. malaccensis seems to do best in an aquarium. This coral has long brown polyps which look like the tentacles of a sea anemone until examined closely. These polyps are capable of catching and eating mosquito larvae, daphnia and brine shrimp, and so help themselves whenever the fish are fed.

Another group of coral capable of feeding on these relatively large creatures are *Fungia* or Mushroom corals. These corals grow on a stalk when small, looking like small mushrooms. As they get larger the stalk breaks and they continue to live detached but sedentary upon the reef. They are in fact just a single large polyp and not a colony. They are covered with ridges and grooves which lead to a central mouth. Their method of feeding can be observed with the naked eye though a hand lens reveals more detail. The unfortunate creature which happens to fall upon the surface of *Fungia* is immediately stung by small tentacles located on the ridges. It is then passed along one of the grooves between the ridges, until it reaches the central mouth which opens to receive it. The opening and closing of the mouth can be clearly seen.

The thin plate-like corals (*Pocina crassa* and *Pachyseris speciosa*) have been found unsuccessful. Corals with very small polyps such as *Porites* and *Montipora* did not do well. The stag horn coral (*Acropora variabilis*) so popular as a decoration when cleaned and dried did not live for more than a few days.

When coral was collected from the reef, the living part was often found to be attached to an even larger piece of dead coral. This dead portion had to be broken off cleanly, while taking care not to damage the living part. During transit the various pieces collected were not allowed to knock together or damage would have resulted causing the death of some of the polyps. Some corals, when picked up gave off a great deal of slime. These types did not seem suitable for the aquarium.

Some soft or leathery corals were kept as well as the hard varieties. *Acyonium murale* was found to be extremely hardy and it is a very attractive growth when its tentacles are extended. Small colourful sponges were also kept for short periods. The corals *Goniopora* and *Fungia* were kept for periods of four to six months without changing any of the water. After six months new corals placed in the same water died within two weeks. In spite of feeding on brine shrimp it is apparent that corals need something which is found only in fresh ocean water. It is therefore a good idea to change part of the aquarium water (say an 1/3 to 1/2) about once a month.

The living coral aquarium provides a natural environment for its inhabitants. They settle down more quickly, behave more naturally and are more interesting to watch. A great deal can be learnt by regular observation of this type of aquarium, particularly if it is complemented by observation of the same species of fish in their natural environment on the coral reef.

Setting up a furnished tank

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tanks I have seen have contained just one shoal of one species. A tank with a small shoal of Tiger barbs is often very attractive especially if the plants have been well chosen. Such fishes will usually keep very active and be on view most of the time. There are, of course, many other species which will shoal well and look good. It is almost hopeless to include the types of fishes which persist in hiding behind the plants and just will not come out so that they can be judged. I have often had to leave such a tank for a long time when judging, in the hope that at least a few fish will become visible.

The size of the fishes is also of great importance as it is not a good idea to include large fishes with small ones. It is far better to try to keep all the fishes to about the same size. It is often possible to include a few which swim near the surface such as Zebras, some which may keep near the centre level and some, such as a loach or two, to occupy the base. With the small types of tropical it is well to use fish which are adult but, of course, this principle cannot be carried out with some of the coldwater fishes which would not be considered exhibition specimens until they were over a foot long. Very large fish would look quite out of place in a tank and I consider that with coldwater tanks three fish of not more than three inches long over-all or two fish of four inches would be sufficient.

Before setting out for the show it is a good plan to work out a rough sketch as to how you intend to place the rocks and plants so that there will be no time wasted rearranging the tank when setting it up. The back of the tank should have a cover, such as coloured paper which can be fixed to the outside of back glass. The colour will be an individual choice but something should be applied to the back as nothing looks worse than to inspect a furnished tank and find that a tank behind can be plainly seen through the one being examined.

Having arrived at the show, the previous night to judging, if possible, the tank should be inspected thoroughly to make sure that the front glass is perfectly clean. The show secretary will allot you a tank and then it is up to you. Having fitted the back paper in position the base compost must now be introduced. When doing so make sure that you are not using too much. Towards the back the depth does not matter very much, but at the front it should not come up above the front frame, or very little above it if at all. The more compost you have above the frame in the front the less of the picture will be left on view. A good plan is to heap the compost up higher at one end so that it is possible to have a broken level at the bottom.

Having roughly laid the base in position the rocks are the next to be positioned. Do not use such large ones that most of the swimming space is lost; to see a tank with almost nothing but large rocks in it will put a judge off from the first. Differing sizes of rocks should be used and if they have a natural strata visible these should all run one way. One fair sized rock with smaller ones graduating away from it can look well and if a small channel can be formed this can assist in creating a variation from any flatness or formality. Do not so place rocks that fishes could get trapped behind them or where there are

so many hiding places that the fishes will rarely be seen.

Having decided on the position of the rockwork the planting will be the next task. This is a very important part of the work as even the best of plants will be of little value if they are not arranged to the best advantage. The first concern will be to cover the back angle iron at the corners. This can be done with the aid of good bunches of a strong growing plant such as *Lagarosiphon major*, or *Cubomba* if for a tropical tank. The plants must be well secured either by planting them under the edge of a rock or by lead strips well tied to the base and such anchorage well concealed in the compost. Suitable plants can be set behind the rocks to soften the appearance but if a channel has been left this should not be planted up except at the very back, and not then if the back cover is correctly coloured.

No roots of plants should be visible except of those plants which normally grow with the base of the root system just above ground level. The ends of the tank should be well planted and then a few carefully placed smaller specimens can be set near the front. Try to plant these so that they look natural and those which grow with runners should have one specimen with smaller runners to the side in descending order of size. Do not stick small pieces of individual plants at regular intervals about the base of the tank. Try to make fair sized groups of each species and do not crowd them together so much that their beauty cannot be seen. An over-planted tank can be almost as bad as an under-planted one. Make sure that the plants chosen are in as near perfect condition as possible for the judges will usually look for broken pieces from the tops and holes made by snails.

Before any fishes are put in the tank make sure that the water is clear and that the plants will not have to be moved around again. Most exhibitors like to have about half the tank filled with water when setting up and the rest is then added carefully by pouring onto a flat board or similar object to prevent the compost from being disturbed. Once the tank is filled with water it may look very cloudy. It should then be carefully emptied and refilled. If the tank can be set up the night before judging it will give it time to settle down and for the water to become clear. It is very difficult to set up a tank within a few hours of judging and have really clear water.

The temperature of the water should be carefully checked, not only for tropical fishes but also for coldwater specimens. The carrying can for coldwater fishes may have become warm and if the water in the tank is icy cold the fishes could easily get a shock which would put them off colour for the duration of the show. Once the whole set-up is to your liking it will be time for the introduction of the fishes. Do this as carefully as possible so that not only the tank but also the fishes will be subjected to as little disturbance as possible. If the fishes are scared badly they may dive behind the plants and be very loath to come out again.

Furnished tanks are usually judged by at least two judges and they may have differing ideas as to what is an attractive picture. Points will be awarded for the choice of fishes, their size in relation to the size of the tank and their quality. The plants will get a similar pointing, the choice, colour and condition of them and the way they are planted. The rocks and compost will be inspected and

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the arrangement of the rocks and the matching of the compost with them will be considered. It is certain that sharp edges will be down-pointed and also the tank could lose points if the rocks are too large and prominent. The clarity of the water can receive five points if perfect and the permanence of the tank will be considered. This can apply to the plants as well as to the fish. If too many vigorous plants have been included this could mean loss of points under this section as could over-crowding of fishes.

Once the water is of a satisfactory clearness the surface should be inspected. It is probable that there is a film on it or some small pieces of plants. A sheet of paper drawn across the top will usually clear this. The front glass should then be cleaned and the cover put into position with the lamps. The wattage of the lamps may be controlled by the society as it is well known that a couple of 100 watt lamps will make a tank look much more attractive than one with 40 watt ones.

The use of well matured tree roots has been a feature in some cases but these must be very old or they might make the water too acid for some fishes. The same can be said of the use of large pieces of bark. In most small shows all the furnished tanks are pointed by the judges, but where there are many it is possible that only the good ones will be so pointed. Any tank which is awarded 80 points or more will usually be in the cards. Points can be deducted for the wrong choice of fish. With tropicals it is possible to find a large range of fishes which would be suitable but with the coldwater types there are not very

many suitable species. The common goldfish, shubunkins and fantails would be a good choice. The veiltails and orandas, although they might be good fish are usually very inactive in a tank.

Of the British freshwater fishes there is not a very large choice as some such as Trout would not be happy in a tank for long. Golden orfe could soon grow very large but very small ones could be used. Golden Rudd, if small would be a good choice as would Golden Tench. Bitterling carp would be good as a few would shoal up and look attractive. With a coldwater tank it will be necessary to use those fishes which are not only colourful but also move around well, and are not likely to become too large within a short space of time.

If aerators or heaters are used they should be placed in such a position that they are not too obvious and the same applies to a thermometer. Remember that although you may have set up the tank perfectly it is possible that if the wrong fishes have been used they might soon mess up all the plants and spoil the whole look of the tank. Some aquarists have a natural gift for setting-up a tank and such a member is usually to be found in every club. I have often noticed that some ladies are better at creating an attractive picture than many men. I do not think that anyone would be likely to win with a tank in a fair sized class if he had not had considerable experience in setting-up a furnished tank, and so any intending new exhibitor would do well to visit a good show and examine the winning tanks carefully and so learn what is required.



from AQUARISTS' SOCIETIES

AT the first February meeting of **Swillington A.S.**, the Ladies' Trophy for Characins was won by Master Paul Stringer. 2, Mr. T. Ball; 3, Master M. Immett. The President's Trophy was awarded to Mr. Paul Reynolds for gaining the most points for showing at Open Shows during 1967.

The guest speaker at the second February meeting was Mr. L. Greenall of Tadcaster, and he gave an interesting lecture on the Breeding of Siamese Fighters. Winners for the Table Show were as follows: Guppies, 1, G. Binks; 2, Mr. and Mrs. M. Linden; 3, G. Nash. Novice: 1, Messrs. J. and M. Linden; 2, Mr. and Mrs. M. Linden; 3, Messrs. J. and M. Linden.

WINNERS of Club Annual Awards of the **Reigate and Redhill A.S.** for 1967 are as follows: Annual Points Trophies, Tropical, G. Bass; Coldwater, W. Leach; Novice Tropical, Margaret Nicoll. A. Burley Siamese Fighter Cup, A. Burley. Home Furnished Aquaria, P. Collins. W. Leach Breeders' Cup (livebearers), G. Bass. Wilkins Breeders' Cup (cogglers), G. Bass. The R. & R.A.S. Magazine Annual Cup for the club member who has given the most selfless service to the Club in the current year, W. Brookfield.

Earlier in February, Mr. R. Eason enlightened his audience on the mysteries of the study of heredity and variation in fish when he addressed the society on Genetics. Mr. C. A. T. Brown judged the Table Show, the results being: Characins: 1 and 2, N. Packman; 3, G. Collins. Rasboras: 1 and 3, P. Young; 2, N. Packman. Angels: 1, K. Wheatley; 2, I. Stemp; 3, M. Nicoll.

Due to the resignation of the Society's

Chairman, G. B. Bass, for domestic reasons, A. Burley is now in the chair. Open Show will be held on the 15th September. Show Secretary: I. Stemp; 10, Benhams Drive, Horley, Surrey. (Tel.: Horley 3249.)

THE following officers were elected at the Annual General Meeting of the **North Kent A.S.**: Chairman: R. Bred. Secretary: Mr. B. Harvey, 60, Shaftesbury Drive, Knights Place, Strood. Asst. Secretary/Press Officer: Mrs. B. Hunter. Treasurer: C. Hunter. Show Secretary: T. Flint. Asst. Show Secretary: C. Wood. Librarian/Social Secretary: B. Blass. Committee Member: P. Wills.

The meetings are held on Tuesday, fortnightly, at Sweeney Primary School, Swanscombe Street, Swanscombe. All visitors can be assured of a warm welcome.

THE Annual General Meeting of the **Burton and District A.S.** took place recently at which some of the 1968 Committee members were elected to office. The remainder of the Committee were elected at subsequent meetings. The Committee members are now as follows: Chairman: Ray Walker; Vice-Chairman: John Sharratt; Secretary: Graham Deeg; Social Secretary: Albert Hunt; Show Secretary: George Chester; Treasurer: Brian Pointon; Equipment Officer: Graham Jackson; News Letter Editor: B. W. Forman; Publicity Officer: John Sharratt.

IN order to foster local interest in cultural pursuits and hobbies, the Arts and Crafts Section of the Redbridge Arts Council is this year staging an exhibition as part of the Town's

Arts Festival, in which the **Ilford and District Aquarists' and Pondkeepers' Society** will be participating. The "Redbridge Exhibition," as it will be called, is to be held in the Redbridge Town Hall, High Road, Ilford, from Wednesday, 1st May to Saturday, 4th May, both dates inclusive. Admission will be free and the hours of opening are from 12 noon until 9.30 p.m. each day and all day on Saturday.

At the February meeting of the Society, a very informative programme on tropical and coldwater plants was presented by Mr. Pye of Romford. Mr. Pye has a large collection of coloured slides on this subject and his knowledgeable comments on these were of great value particularly to new members.

Programmes for the next few months are as follows:—Monday, 8th April, 8 p.m., Auction of fish and plants, for members. Table Show: Any variety Plants. Any variety Characins. Monday, 13th May, 8 p.m., Coldwater fish and garden pools. Talk with slides. Table Show: Any variety Single tail Goldfish. Any variety Swordtail. Any variety Labyrinth.

Anyone interested will be welcome to attend these meetings, and details of the Society may be obtained from the Secretary, R. Ruth, 13, Dunkeld Road, Dagenham.

THE monthly Bulletin of the **Nottingham and District A.S.** contains an Obituary Notice for George Bulleyment, one of the Club stalwarts who passed away recently. He had been a member for over seven years, and his passing has caused a gap in the Society which will be very hard to fill.

At the January meeting there was a programme of colour slides with taped commentary entitled "The Life of the Brine Shrimp." The table show results were: Barbies: 1, A. Saxton; 2 and 3, K. Birns. Loaches: 1, P. Bales; 2, D. Holland; 3, K. Birns.

AT the Annual General Meeting of the **Chapelton & District Aquarist Society**, the following officers were elected:

A. S. Addy, President; A. Hirst, Vice-President; R. Crofts, Secretary; J. Waring, Treasurer; E. W. Fearnborough, Show Secretary; D. Sides, Assistant Show Secretary; L. Wroe, J. Holden, P. Adams, Committee.

New members are always welcome, and for details of membership, should write to secretary R. Crofts, 42, Burncross Road, Chapelton, Nr. Sheffield, or come along any Friday night to the Midland Hotel.

AT the tenth annual general meeting of the **Torbay A.S.**, the following officers were elected: Chairman: Mr. Thompson; Hon. Secretary: Mr. J. Haynes; Hon. Treasurer: Mr. Palin.

A decision was reached to hold twice monthly, instead of only one meeting per month, and an all-out effort is to be made to increase the membership of the Society. Forthcoming events include a Cine Film Show on the 9th April and a talk on the 30th April by Mr. Thompson on "A Collection of Coldwater Fish." Any person interested in the hobby in the Torbay area should contact the Secretary at 6, Cleveland Road, Paington (57400).

THE **Clapham A.S.** is now in full swing at the new headquarters, Friendship House, Springfield Methodist Church, 200, Wandsworth Road, Vauxhall, S.W.8. Forthcoming attractions include a trip to London Zoo aquarium, behind the scenes. New members are welcome and should contact the secretary, M. J. Denbow, 26, Tiltotson Court, Lansdowne Green, S.W.8.

THE **Ellesmere Port Tropical Fish Society** held its third annual general meeting recently and are now able to face the new year with a substantial increase in the club funds due to the efforts of the retiring treasurer. Several new members had been enrolled during the year and the secretary thanked all the members for their support and attendances. A varied programme had been laid out for the future which should give plenty of interest to all. The Breeders' Trophy for 1967 was won by Mrs. Kershaw and the Most Points Trophy by Mr. Bowyer. These will be presented with the table show awards at the annual dinner which will be held in April.

The following officers were elected: Chairman, J. Bowyer; Hon. Secretary, R. Peers; Hon. Treasurer, Mrs. C. Kershaw; Hon. Show Secretary, R. Patten. Anyone interested will find a welcome at the meetings held on alternate Mondays at the Woodlands Hotel, Whiteby, or see invited to contact the secretary at 32, Brownlow Road, New Ferry, Wirral.

THE officers elected at the **Hounslow and District A.S.** were as follows: Chairman, J. Thorne; Secretary, D. Woodward; Show Secretary, H. Pratt; Press Secretary, B. Abbott; Librarian, E. Sheppard; Public Relations Officer, R. Scurry; Social Secretary, R. Nelham; Committee Members, J. White, Mrs. Celia Woodward. The Society's Annual Dinner and Dance was held at the Feltham Hotel on 6th January, when some 150 members and guests had a really wonderful evening. All the trophies were presented by the Guest of Honour, Mr. Jim Kelly.

The results of recent events were as follows: Labryntia: 1, Mrs. Rona Brewer; 2, C. Bunce; 3, B. Strygall. Characins: 1 and 3, J. Thorne; 2, Mrs. Rona Brewer. Cichlids: 1, Mrs. Ann Smith; 2, J. Smith; 3, Mrs. Rona Brewer. Any other variety: 1 and 3, B. Strygall; 2, J. Thorne.

THE Annual General Meeting of the **Brighton and Southern A.S.** was held in February and the Chairman, in making his report to members, emphasised that membership and attendance at meetings had greatly improved over the last year. With regard to the Club table shows there had been an increased number of entries resulting in fair competition for the Club Championship. The programme over the last year had been very successful, this included several lectures and film shows which he thought had been instructive to members. With regard to the Club outing in mid-summer to Queens-

borough Fisheries and Windsor, although this had been marred by the weather, an enjoyable day was had by all. Referring to the last Open Show, this had been very successful but he felt that the coming year's show would be a greater success and certainly the finest the Club has seen due to a change of day and venue coupled with promised support from the F.G.A. and the inclusion of a furnished aquaria competition for the Dora Bryan trophy which is to be competed for annually in open competition.

The following members were elected to office: Chairman: J. Pelham; Secretary: B. Shelton, 45, Coventry Street, Brighton; Treasurer: Miss P. M. Carr; Open Show Secretary: R. Browning, 34, Rowan Close, Portslade, Sussex; Club Competition Secretary: V. Addis; Committee members: T. Croucher, P.R.O. and J. Kail. At the Annual Prizegiving held later in the month, the following trophies were awarded: Club competition Championship: D. J. Soper; Ladies' Trophy: Mrs. P. Ainsworth; Dave Harris Trophy: T. J. Goucher; Home Furnished Aquaria: A. L. Ainsworth; B. B. Dilley; "Fish of the Year" cup: E. Cummins; The Dora Bryan trophy: T. J. Croucher.

A very interesting programme has been arranged for the coming half-year to include on 10th April, a slide-tape lecture with commentary by Jim Kelly which has been hired from the F.G.A. and any person who may be interested would be assured of a warm welcome at any meeting which are held over the Prince George, Trafalgar Street, Brighton, on Wednesdays, fortnightly.

A CHANGE of venue for meetings is reported from **Rugby and District A.S.** The new address is Northlands School, Pindens Lane, Rugby. The Society meet on the first and third Monday in the month at 7.30 p.m. The new secretary is D. Green, 62, Cotton Road, Rugby.

RECENTLY the **New Forest A.S.** held a Bottle Show competition with the neighbouring Salisbury A.S. The two classes were for "Barbs" and "Swordtails", the results being as follows: Barbs: 1, N.F.A.S.; 2, N.F.A.S.; 3, Salisbury; 4, N.F.A.S. Swordtails: 1, Salisbury; 2, N.F.A.S.; 3, N.F.A.S.; 4, Salisbury. The judges were H. Earle and L. James from Bournemouth Aquarists' Club.

The main item of the evening was a Colour Slide Show presented by Mr. R. Marley of Bournemouth A.S. who is a well known F.B.A.S. Judge. The monthly meetings are held at Lynton, on the third Monday every month, at 7.30 p.m. Details of membership may be obtained from the Secretary: R. Travers, 6, Auckland Avenue, Brockenhurst, Hants, SO4 RRS.

THE journal of the **York and District A.S.** "Lateral Lines" contains news of the sudden death of Albert Simons who was the Editor and also Treasurer to the Society, and further details should be available later. The January table show results were as follows: Livebearers (Open Class): 1, B. Flows; 2, G. Pygott; 3, D. Reynolds; 4, Master Thiel. Novice Class: 1 and 3, P. Masud; 2, A. B. Dearing. Junior Class: 1, Master P. Carey; 2 and 4, Master R. Thiel; 3, Master P. Loughman.

THE Annual General Meeting of the **Portsmouth A.S.** was held recently and the following Officers and Committee were elected: Chairman: J. Stillwell; Secretary: Mrs. L. A. Howard, 196, Moneyfields Avenue, Copnor, Portsmouth; Treasurer: G. Marks. Show Secretary (elected September 1967): W. Ryder; Committee: Miss W. Ryder, Mrs. J. C. I. Stillwell, J. Smith, V. Hunt, H. Armitage and Mr. Whyte.

THERE is a change of officers in the **Walthamstow and District A.S.** At the Annual General Meeting the following officers were elected: Chairman: D. Goodbody; Vice-Chairman: K. Hobson; Treasurer: D. Goldsworthy; Secretary: B. Mather; Show Secretary: T. Needham; Committee Members: C. Scott and P. Smith.

An active programme is being prepared by the Committee covering all aspects of the hobby and including tropical and coldwater fish, aquatic plants, pondkeeping and foods, etc. The Society meets at 8 p.m. on the first Friday and third Wednesday in each month at Wins Avenue School, E17 (near Police Station). Please address any correspondence to B. Mather, 18, Albion Terrace, Sewardstone Road, Chingford, E.4, who will also be pleased to supply further details.

THE **Hale A.S.** has been in existence for the past twelve months and has recently been accepted into the Federation of Northern Societies. There is a mixed membership of adults and juniors who all seem enthusiastic and eager to learn about tropical fish. The Committee is as follows: G. Fenton, Chairman; R. Taylor, Vice-Chairman; Mrs. B. Taylor, Secretary, 3, Victoria Road, Timperley, Altrincham, Cheshire; A. Blackwood, Treasurer. Other Committee members are: A. Pimlott, R. Marsh, R. Garner, Mrs. D. McHardy. The Junior Committee members are: Master J. Walker and Master G. Raygoda. The headquarters are situated in the cellar of a local Pet Store and the proprietor allows the Society to use this once fortnightly for the meetings, for which the Society is very grateful.

THE Table Show results at the February meeting of the **Brent A.S.** were as follows: Cichlids: 1 and 3, R. Fox; 2, C. Swinburne; 4, J. Line. Toothcarps: 1, R. Fox; 2, C. Eltringham; 3, P. Shrimpton; 4, D. Bevan. Best in Show: R. Fox.

At the second Table Show of the above Society held on 27th February, results were as follows: Swordtails: 1 and 3, J. Reed; 2, C. Eltringham; 4, P. Shrimpton. Loaches: 1 and 3, P. Shrimpton; 2, C. Swinburne. Barbs: 1, M. O'Connell; 2, 3 and 4, C. Swinburne. Best in Show: M. O'Connell.

This ended Section 1, Series No. 1 of the Denis Smith Challenge Trophy, resulting in the overall winners being: 1, C. Swinburne with 30 pts; 2, P. Shrimpton with 25 pts; 3, R. M. Fox with 17 pts; 4, M. O'Connell with 16 pts. The final Section was judged and the award presented by Mr. Gerald Jennings of the International Marine Study Society. The Club enjoyed further successes by taking two of the four awards at the F.B.A.S. Cichlid Competition on the 2nd March.

THE election of Officers and Committee for the **Bradford and District A.S.** was held at the annual general meeting and resulted as follows: President, D. Carr; Vice-President, G. Goodson; Secretary, W. L. Haley, 13, The Oval, Allerton Road, Bradford; Treasurer, R. Winterburn; Social and Publicity Officer, J. Hodgkinson. Committee: B. Shepherd, H. Greenwood, G. Carrington, B. Kenningham, A. Rudd, J. E. Casstra, H. Fletcher.

THE first annual general meeting of the **Chorley and District A.S.** was held in January. Membership has grown to 44, and the retiring Chairman, Mr. D. Ince was very happy with the first year's progress. The Junior section, particularly had shown tremendous enthusiasm and the entire Club had been given a very good beginning. The Treasurer was pleased to report a sound financial position. The highlights of the year were a visit to the B.A.F. at Belle Vue, and the staging of an exhibition in the foyer of a local cinema which attracted many visitors.

Trophies for two annual competitions were awarded: "Member of the Year" was D. Spedding (Seniors) with 61 pts, and Clive Lloyd (Juniors) with the splendid total of 80 pts. "Champion Member" Trophies were awarded to the Member gaining most prize cards at Table Shows during the year. These were won by D. Christie (Seniors) 22 pts, and Ian Ince (Juniors) 29 pts. A new Chairman and Vice-Chairman were elected, these being E. Oates and D. Spedding respectively. R. Berry was re-elected Treasurer and W. Lacey re-elected Secretary. Any persons interested in joining the Society can contact the Secretary at 11, Haigh Close, Chorley.

OFFICERS for the Kingston and District A.S. this year are as follows: Chairman, D. Stewart; Treasurer, Mrs. R. Greenhalf; Secretary, Miss P. Greenhalf, 39, Garth Close, Morden, Surrey; Show Secretary, G. H. Greenhalf, Committee, M. Bantley, B. J. Pawley, Pirm Officers, C. Harrison, Miss P. Greenhalf. The new Open Show date is the 18th May (previously held in September).

THE following is a report of the Mid-Herts A.S. activities for January. The first meeting was the Annual General Meeting and the elected committee is as follows: Chairman, T. Timms; Vice-Chairman, T. Mahoney; Secretary, T. Summers; Asst. Secretary, T. Hawley; Treasurer, B. Davison; Show Secretary, C. Withers; Asst. Show Secretary, L. Welles; News Letter Editor/Public Relations, D. Lander; One Hon. Member, P. Bird.

The second meeting held was a table show for Barbs and A.O.V. Tropical, the judge being Mr. Cannon. Results: Barbs: 1, B. Davison, Albino Tiger, 86 pts.; 2, T. Summers, Barbus Chola, 85 pts.; 3, R. Savage, Chequer Barb, 84 pts.; 4, S. Birch, B. Socolkanus, 83 pts. A.O.V. Tropical: 1, C. Withers, Aust. Rainbow, 84 pts.; 2, B. Rumsey, Aust. Rainbow, 83 pts.; 3, B. Davison, Knife Fish, 82 pts.; 4, P. Barnard, Aust. Rainbow, 81 pts. Best Fish in Show: B. Davison, Albino Tiger.

AT the annual general meeting of the Hull A.S. a presentation was made to Mr. Robinson, founder member and retiring president of the Society. The officers elected were as follows: President, W. A. Hall; Vice-President, W. Houldby; Chairman, A. Douglas; Vice-Chairman, T. Douglas; Secretary, Mr. J. H. Mitchell, 94, Etherington Drive, Beverley Road, Hull 851950; Assistant Secretary, Mr. R. Butch; Show Secretary, Mr. L. W. Holt; Assistant Show Secretary, Mr. T. Collingswood; Treasurer, Mr. E. Storey; Librarian, Mr. R. Pool. Recently a talk was given by Mr. R. W. Holt on the environmental conditions in an aquaria. Some very interesting slides were shown, some on a micro projector, which was greatly appreciated by the very large attendance. The Table Show of Anabantids resulted as follows: 1, K. Jesney; 2, J. Mitchell; 3, A. Parish. Meetings are held on the first and third Wednesdays of the month at the Railway Institute, Anlaby Road, Hull, at 7.30 p.m. All visitors are assured of a warm welcome.

THE annual general meeting of the Guildford A.S. saw a change of committee, chairman and secretary. Mr. D. Aylott who has been chairman for seven years was made honorary life member and president, Mr. P. Lee was elected chairman and Mr. T. Walker, 67, Applegarth Avenue, Guildford, Surrey, Secretary. A new independent committee was also selected from the members. During the course of this year's programme the club's silver cups will be awarded at table shows within the club. There is also to be a recruiting drive for new members with a prize for the person bringing the most new members, and an outing for the members' wives and families to a local beauty spot. The most important new decision however has been for monthly news letters to members to be edited by the chairman and assisted by the secretary.

DURING the February meeting of the Enfield and District A.S. Mr. J. Morris gave an interesting talk on fishhouses and Home Furnished Aquaria. Both of these subjects were illustrated with coloured slides. The table show this month was for Barbs and there were twelve entries. The result was as follows: 1, D. Wats, Tiger Barbs; 2, B. E. Bird, Tiger Barb; 3 and 4, T. Mann, Rosy Barbs. Mr. Morris judged the show.

AT the annual general meeting of the Dewsbury and District A.S. the following officers were elected: President, M. Pugh; Vice-President, S. Brown; Secretary, G. Whitley; Treasurer, A. Bradley; Show Secretary, K. Boothroyd; Social Secretary, Mr. Scholes; Librarian, S.

Brown; Publicity Officer, Mrs. K. Cassidy; Liaison Officer, G. Woodhouse. Delegates for the A.Y.A.S. G. Whitley and K. Boothroyd. Delegates for the F.N.A.S. G. W. Cooke and A. Bradley. Auditors, D. M. Crowther and I. Thorington. Meetings are held in the Further Education Centre, Park Road, Batley, on the second and last Thursday of the month. Anyone wishing to join the Society please contact or write to G. Whitley, Secretary, 17, Lower Hall, High Town, Liversedge.

REPORTS of a very successful year were given by the officers at the annual general meeting of the Blackpool and Pylde A.S. The Show Secretary's report included a reference to a float in the Round Table Carnival Procession made to represent a water garden complete with real live mermaids. The Society also achieved a record number of entries for a one day show and at the B.A.F. a second place was gained in the Stand section. Also at the same Exhibition J. Taylor won a double with the Carrons Trophy and the Walter Smith Shield for Furnished Aquaria. C. Jones took a second place with a Furnished Marine tank, and several other awards.

The Chairman's report included the Dinner Dance where over a hundred members and friends saw the presentation of table show trophies: Singleton trophy (Single Fish); Robinson trophy (Pair); Luge trophy (Breeder); all won by T. Canliffe. Simmons' trophy (Fish of the Year): C. Jones. Cardwell trophy (Fighter): F. Baker. Home Furnished trophy: Mrs. B. Marsden. Beardall trophy (50c member gaining most points at Open Show): F. Woodward. Juniors: Singleton, Robinson and Legge trophies all won by Master D. Clark. Members of the Ladies' Committee made a presentation to the top table of three Nameplates in memory of the late Mrs. Hadley, who had been a stalwart member for many years. They are in polished wood with the names Chairman, Secretary, Treasurer, in white letters.

THE officers elected for 1968 were: President, Clifford Cross; Vice-Presidents, V. Fletcher, G. N. Hadley, J. E. Etherington; Chairman, F. E. Taylor; Vice-Chairman, C. Jones; Secretary, L. C. Howard; Assistant Secretary, A. Marsden; Treasurer, K. Pearson; Technical Advisor, Ray Legge; Executive Committee, E. Crowther, T. Canliffe, L. Howlett, A. Marsden, B. Simmons, F. C. Willmin; Show Committee: J. Cross, T. Canliffe, D. Fish, L. Howlett, C. Jones, B. Litter, A. Marsden, B. Simmons, F. C. Willmin; Librarian, L. Howlett; Auditor, W. J. Victor-Cooper; Solicitor, F. Irving Harris; Publicity Officer, B. Litter; Table Show Secretary, T. Canliffe; Equipment Officer, G. N. Hadley. Further details can be obtained from the Secretary, Mr. L. G. Howard, 56 Stamford Avenue, Blackpool, Tel. No. 42976.

THE visiting judge and speaker at the February meeting of the Pontefract and District A.S. was Mr. L. Greenall of Tadcaster. The monthly table show results were: Fighters: 1, 2 and 3, D. and B. Cohen, Anabantids: 1, Goodall and Piper; 2, D. and B. Cohen; 3, J. Tenks. Furnished Jars: 1 and 3, Goodall and Piper; 2, Town and Tranter. The monthly trophy was won by Messrs. Piper and Goodall with a Lace Gourami. After judging, Mr. Greenall gave a very informative lecture on Fighters.

The members of the Newport A.S. were hosts to the neighbouring Barry Society at the February meeting in an Inter-Club table show. The result proved to be a victory for the home society winning the livebearer class by 222 points to 220, and the egglayer class by 225 points to 224. The judge was C. W. Lewis, F.R.A.S. Individual results were: Livebearers: 1, A. Ibbotson (Barry); 2, D. C. Bishop (Newport); 3, H. Walker (Newport). Egglayers: 1, W. Chapman (Newport); 2, Mrs. V. Tippins (Barry); 3, A. Ibbotson (Barry).

Meetings of the society are held on the first Tuesday of each month at the R.A.O.B. Club, Havelock Street, Stow Hill, Newport, commencing at 7.30 p.m. Further details are obtainable from Mr. L. G. Phillips, 34, Brangwyn Crescent, Newport, Mon., NPT 7QY.

THE Crawley College A.S. opened this year's session with the annual general meeting. The new committee for 1968 is as follows: Chairman, D. Wadey; Hon. Secretary, Mrs. J. P. Partridge; Treasurer, R. Partridge; Show Secretary, N. Woodhams; Assistant Show Secretary and Press Officer, C. T. Emsler. Committee members, G. Hall and D. Evans.

THE annual general meeting of the North of Scotland A.S. was held in the Y.M.C.A. on 13th February. The management committee was elected for the year 1968-1969. President, Mr. S. Cox, Holburn Tropicals, Holburn Street, Aberdeen; Secretary, Mr. H. Todd, Culter Police Station, North Decide Road, Culter; Treasurer, Mr. D. C. Leslie, 14, Halliwell Crescent, Bieldside, Aberdeen, and six committee members.

Anybody interested in joining the society can obtain application forms from the above-mentioned secretary.

AT the end of January the Harlow A.S. held their annual Social and Dance which was attended by 150 members and friends. The following Trophies were awarded: Breeders' Cup, H. Vinnall; Home Furnished Aquarium Cup: 1, R. Salisbury; 2, P. Daley; 3, M. Pantton; 4, P. Barton. Black Widow Cup: 1, R. Kerridge; 2, Peter Wheeler; 3, A. Day; 4, J. Rancilife. Fighters' Cup: 1 and 3, J. Duncan; 2, M. Pantton. The Table Show Trophy resulted in a "tie" for both Novice and Senior between P. Barton and M. Pantton; second place Novice, G. Larwill; Senior, J. Soames; third place Novice, S. Morgani; Senior, J. Duncan.

At the annual general meeting the following officers were elected: Chairman, J. Soames; Vice-Chairman, G. Larwill; Secretary, J. Duncan; Treasurer, Mrs. V. Duncan; Show Secretary, R. Kerridge; Auditor, J. Shire; Committee, Mr. and Mrs. B. Salisbury, P. Barton, S. Morgani, P. Daley, H. Sharratt, J. Jarvis. Due to increased membership the Society's headquarters will be moved from Maude Salom to Tye Green Community Centre from March.

DESPITE bad weather conditions there was a good attendance of members at the February meeting of Horsforth A.S. It was a very interesting evening with the slides of the Manchester B.A.F. showing all the fish and set-ups and the fine trophies that were presented to the prize winners. The slides were shown and taken and the commentary given by the chairman, Mr. Ray Hampson. The table show was furnished jars and the winners were: Specified Class: 1, Mr. Bowland; 2, A. Jobbins; 3, S. Elmsb. Adult A.O.V.: 1, Mr. Bowland; 2, Mrs. Hall; 3, B. Beeston. Junior A.O.V.: 1, P. Kirby; 2, P. Dickinson; 3, O. Bancroft.

THE results of the monthly shows of the Keighley and District A.S. for January were: Livebearers: 1, 3 and 4, A. White; 2, T. Cummins. A.O.V.: 1, 3 and 4, A. White; 2, Mrs. Whitfield. Novices A.O.V.: 1 and 3, T. Cummins; 2, R. Greenwood; 4, G. Crossley. Junior A.O.V.: 1 and 2, Master A. White; 3 and 4, Master P. Remde. A slide show of Tropical, Coldwater and Marine fish was given by Mr. Carr of Bradford during the evening.

The February show results were as follows: Fish of the month: 1, Mrs. Whitfield; 2, Mr. Burnap; 3, Mr. White; 4, Mr. Smith. A.O.V.: 1, H. Smith; 2, Mrs. Whitfield; 3 and 4, Mr. White. Novices A.O.V.: 1 and 3, Mr. Melvin; 2, Mr. Bickle; 4, Mr. Crossley. Junior A.O.V.: 1 and 2, A. Smith; 3, A. White; 4, M. Greenwood. The evening lecture was given by Mr. G. Holmes of Bradford and his subject was the breeding of Tropical fish, the feeding of them and the raising of young fish to show standards.

AN assembly of over 40 people attended the February meeting of the Bournemouth Aquarists Club and spent an enjoyable evening there. After the reading of the Minutes of the previous meeting a general

discussion took place about the design and selection of the new Club badge. This was followed by comments and much favourable criticism of the awarding of a Medalion to the First prize winner in each Table Show competition. Members then heard the Secretary, Mr. I. Andrews, read an invitation from Hounslow A.S. to arrange a day's outing combined with a Bottle Show, later in the year, the hospitality to be returned by Hounslow A.S. early in 1969.

The main item of the evening was a coloured slide show by R. Masley, to whom much credit is due, as not only did he give a most comprehensive commentary but had over a period of years taken the pictures himself. During the interval the Table Show of the month was judged by J. V. Jeffrey, with the following results: Sweettails: 1, R. Travers; 2, B. Poole; 3, Mr. Waddilove. Breeders' Class, Owned Pairs: 1, Mr. Hagg (Angels); 2, Mr. Brewer (Dwarf Goussons); 3, Mr. Coombes (White Cloud Mountain Minnows).

NEW SOCIETIES

The Falmouth and District A.S. has been formed recently and the following Officials elected: Chairman, M. Nicholson; Secretary, J. Taylor; Treasurer, Mrs. May; Show Secretary, P. Gibbs; Public Relations Officer, L. T. Adshrod; Librarian, G. Symonds.

The Society meets on the first and third Thursday of each month at the Falmouth Labour Club at 7.30 p.m. Anyone interested is most welcome and should contact the Secretary, J. Taylor, 3, St. Anthony Way, Falmouth, Cornwall, or come along to any of the meetings.

A new club has been formed in South Wales known as the Llanelli and District A.S. Club meetings are held every fourth Tuesday at 7 p.m. Visitors and potential members are welcome. Information would also be appreciated of judges and lecturers within travelling distance. All communications to the Secretary, T. D. Davies, Flat 8, West End, Llanelli.

A new aquarist society has been formed in the Birmingham area, to be known as the Longbridge and District A.S. The club meets on the first Friday in the month at the Co-op Hall, corner Bristol Road South, Cliff Rock Road, at 7.45 p.m. The results of the first meeting were very encouraging and a well supported society appears to have been formed.

The committee elected, were as follows: Chairman, D. Dyas; Vice-Chairman, R. D. Mole; Secretary, L. Cottam; 13, Cottage Lane, Marlborough, Bromsgrove, Wexley; Show Secretary, P. Massey; Treasurer, G. Shipman. Anyone interested in joining is most welcome, from beginners to experts, and should contact the Secretary.

On the 29th February the Meersbrook A.S. was inaugurated and there were eighteen members at the first meeting. The meetings will be held once a fortnight on Thursdays at 8 p.m. at the Meersbrook Park Vauxhall. The next meetings are on Thursdays, 14th and 28th April. New members will be welcome, and should contact the secretary, J. M. Price, 641, London Road, Sheffield, 8.

SECRETARY CHANGES

Rugby and District A.S.: D. Green, 62, Cotton Road, Rugby.

Cambridge and District A.S.: New joint secretaries: K. Able, 5, Cherry Close, Milton, Cambridge and L. Georgeson, 16, Leys Road, Cambridge.

Burton and District A.S.: G. Degg, 189, Hasfield Lane, Winsthill, Burton-upon-Trent.

Walthamstow and District A.S.: B. Mather, 18, Albion Terrace, Sewardstone Road, Chingford, London, E.4.

AQUARIST CALENDAR

5th April: Belle Vue A.S. Open Show at Switchgear and Cowan Social Club, Manchester.

7th April: Valley A.S. Third Annual Open Show at Civic Hall, Ramothbottom. Schedules are obtainable from Mrs. M. Thomson, Secretary, 88 Sunnyside Lane, Holcombe Brook, Ramothbottom, via Bury.

7th April: Stocksbridge and District A.S. First Open Show, Victory Club, Manchester Road, Stocksbridge, nr. Sheffield.

14th April: Nelson A.S. Annual Open Show at Nelson Civic Hall, 2 p.m. Details from B. Tate, Assistant Secretary. Tel: BLY 21050.

20th April: Thurrock A.S. First Open Show at Gipsy Lane, Grays, Essex. Show schedules can be obtained from D. C. M. Durrant, 22 Kingsman Road, Stanford-le-Hope, Essex.

21st April: Stockton-on-Tees A.S. Third Annual Open Show at St. Joseph's Church Hall, Norton. Schedules are now available from Mr. J. Chamberlain, Show Secretary, 15 Tarring Street, Stockton-on-Tees.

27th April: Bath A.S. Open Show at St. Peter's Hall, Dorset Street, Lower Bristol Road, Bath. Details available from Mrs. M. Grogan, Hon. Secretary, Inglescombe House, 135, Wells Road, Bath.

27th April: Winchester A.S. First Annual Open Show, venue to be announced later. Show Secretary, Mr. R. Hatchett, 234a High Street, Eastleigh, Hants.

28th April: York and District A.S. Annual Open Show. M. H. Cooper, Show Secretary, 2 Hawthorn Spinney, Brockfield Park, Huntington, York. Schedules now available.

28th April: Oram A.S. Annual Open Table Show, Oram Recreation Hall, Refuge Street, Shaw, Oldham. Further information and Schedules may be obtained from Mr. J. E. Shore, 53, Refuge Street, Shaw, Oldham.

4th May: Freeland A.S. Third Open Show at The London College of Printing, Elephant and Castle, London, S.E.1. Details and entry forms can be obtained from Show Secretary, Mr. A. Howes, 26, Robena Street, Catford, London, S.E.6.

4th May: Trowbridge and District A.S. Open Show.

5th May: Derby Regent A.S. Open Show at the Engineers' Club, Ozmanston Road, Derby.

12th May: Leigh A.S. Open Show at the Leigh Rugby Union F.C. Ground, Pennington, Leigh, Secretary, D. Grundy, 96, Manchester Road, Tyldesley, Manchester.

12th May: Woking Aquarist & Zoological Society Annual Open Show. Venue to follow.

18th May: Bridgend and District A.S. First Open Show.

18th May: Kingston and District A.S. New Open Show date (previously held in September).

18th May: Reading and District A.S. First Open Show, All Saints' Hall, Downshire Square, Reading. Schedules are available from Mr. B. Grant, 20, Dover Street, Reading.

18th May: Merseyside A.S. Open Table Show at Merseyside Athletic and Social Club, 5 Richmond Terrace, Liverpool 6.

25th May: Keynsham and District A.S. Open Show at Charlton Road, Keynsham in Bristol. Schedules are available from J. D. Brown, Show Secretary, 76, Pearl Street, Bedminster, Bristol, 3.

8th June: Catford A.S. Open Show. Particulars may be obtained from Mr. K. Owen, 196, Langley Way, West Wickham, Kent.

8th June: Llansit Major A.S. Annual Open Show. Details available from Show Secretary, J. Sanders, 26 Sandfield Road, Abernffig, Bridgend, Glam.

8th June: Southampton and District A.S. Open Show at St. Deny's Hall, Southampton. Hon. Show Secretary, Mr. D. A. Gibbs, 57, Weyell Road, Bitterne Lodge, Southampton.

13th June: Bracknell and District A.S. (hosts), Three Counties Annual Open Show, Victoria Hall, Bracknell. Show Secretary, Mr. K. Phillips, 40 Pondmoor Road, Bracknell, Berks.

15th June: Yeovil and District A.S. First Open Show at Grass Royal School, Yeovil. Details from Show Secretary, Mrs. T. Gillard, 42, Crofton Ave., Yeovil.

16th June: Brighton and Southern A.S. Annual Open Show, Marmion Centre, Marmion Road, Hove. Show Schedules are available from R. Browning, 34, Rowan Close, Portlade, Sussex.

16th June: Lytham A.S. Annual Open Show to be held at Lowther Pavilion, Lowther Gardens, Lytham, Lancs.

16th June: Swillington A.S. Open Show, Swillington Primary School, Swillington.

22nd June: Alfreton and District A.S. Annual Open Show. George Hotel, Chesterfield Road, Alfreton. Schedules may be obtained from Mr. S. Hill, Show Secretary, 35, South Street, Riddings, Derbyshire.

22nd June: Bradford and District A.S. Open Show at the Textile Hall, Bradford.

22nd June: Cambridge & District A.S. Open Show at the Guildhall, Cambridge.

22nd June: Salisbury and District A.S. Annual Open Show.

27th-29th June: Bristol Tropical Fish Club. Further details available shortly.

7th July: Cheltenham & District A.S. Annual Open Show, Ambulance Headquarters Hall, 86, Gloucester Road, Cheltenham.

12th-14th July: Romford and Beacontree A.S., Dagenham Town Hall. All enquiries to Mr. J. M. R. Pyne, 3, Ashvale Drive, Grantham, Essex. Phone: Uppminster 28435.

14th July: Medway A.S. Second Open Show at St. John Fisher School, Chatham. Secretary, Mr. K. Brown, 5 Allison Avenue, Gillingham, Kent.

14th July: Bournemouth Aquarist Club Annual Open Show at Kinson Community Centre, Pelham Park, Kinson. Show schedules and entry forms available after 1st May from Show Secretary, Mr. J. V. Jeffrey 30 Ilwacrae Avenue, Southbourne, Bournemouth.

27th July: Croydon A.S. Open Show to be held at the Stanley Halls, South Norwood, London, S.E.25. Further information may be obtained from the Secretary, Mr. D. H. Crowley, 180 Harrington Road, South Norwood, S.E.25.

3rd-10th August: Portsmouth A.S. Open Show at the Portsmouth Community Centre, Twyford Avenue. Schedules available from Mr. W. Ryder, Show Secretary, 493 Commercial Road, Portsmouth.

11th August: Rainworth and District A.S. Open Show at the Showroom of E. Taylor and Sons (Southwell) Ltd., West End Garage, Southwell, Notts. Hon. Secretary, Mr. K. Clifford, North Stoke, 45a, Linlith Street, Mansfield.

14th-17th August: Midland Aquarium and Pool Society Annual Open Show, Bingley Hall, Birmingham.

31st August-1st September: Harlow A.S. Open Show.

7th September: High Wycombe A.S.

7th September: Yate and District A.S. Open Show.

7th September: Bethnal Green A.S. Annual Open Show at the Bethnal Green Evening Institute. More details will be available later.

7th-8th September: Rochampton A.S. First Open Show in conjunction with Wandsworth Borough Council.

8th September: Warrington A.S. First Open Show.

14th September: Hounslow and District A.S. Annual Open Show at the Youth Centre, Cecil Road, Hounslow.

15th September: Reigate and Redhill A.S. Provisional date, venue to be fixed. Show Secretary, Mr. I. Stamp, 10, Bethans Drive, Horley.

21st September: Amersham and District A.S. Annual Open Show. Secretary, Mrs. Veronica Keating, 62, Townsend Road, Chesham, Bucks.

21st September: Newport A.S. Sixth Annual Open Show at the Duffryn Junior High School, Show Hill, Newport. Details from the show secretary, Mr. M. J. Parry, 45, Western Drive, Gabafla, Cardiff.

29th September: Hocknell and Bulwell A.S. Annual Open Show.

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



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RULES AND REGULATIONS

1. Judged to F.N.A.S. and F.B.A.S. rules.
2. Judges decision will be final.
3. Entries accepted up to May 10th at 25/-.
4. Late entries accepted up to June 1st at 35/- and no entries will be accepted after June 1st.
5. Any competitor may enter any number of entries and win any number of prizes.
6. No aquarium will be dismantled under any circumstances before 6 p.m. on the final day.
7. All aquarium water will be removed by the management.
8. Any person employed, related, or in any way connected with the organisers are exempt from entering the competition.
9. Whilst the utmost care will be taken, the organisers cannot be held responsible for loss of, or damage to, any property or livestock deposited in the exhibition hall prior to and throughout the duration of the exhibition.

10. The organisers reserve the right to refuse any exhibition entry.
11. The Hall will be open to competitors from 10.0 a.m. to 8.0 p.m. on Saturday and Sunday, June 8th and 9th, for the purpose of preparing exhibits.
12. Standard lighting will be provided by the organisers, comprising 2/40w lamps or 2/25w lamps, no alternatives will be permitted.
13. No competitor will be allowed in the Hall whilst judging is taking place.
14. Judging will take place on Monday and Tuesday, June 10th and 11th.
15. Any unforeseen circumstances will be dealt with by the organisers, at their discretion.
16. Each entrant will receive his numbers and final instructions by June 1st.
17. If required, a form will be available authorising the show committee to feed the competitors' fish during the show. This is purely optional.
18. All entry forms must be accompanied by entry fee/s.

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I, (name) _____
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wish to submit _____ entries (25/- per entry up to May 10th, late entries 35/-), for the National Furnished Aquaria Exhibition, Freshwater/Marine section (delete where not applicable).

Please find enclosed P.O./Cheque to value £ _____ P.O. No. _____ Cheque No. _____

This entry form confirms the acceptance of the rules and regulations laid down above.

Entrant's signature _____ Date _____

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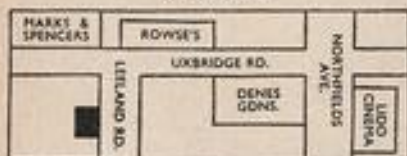
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