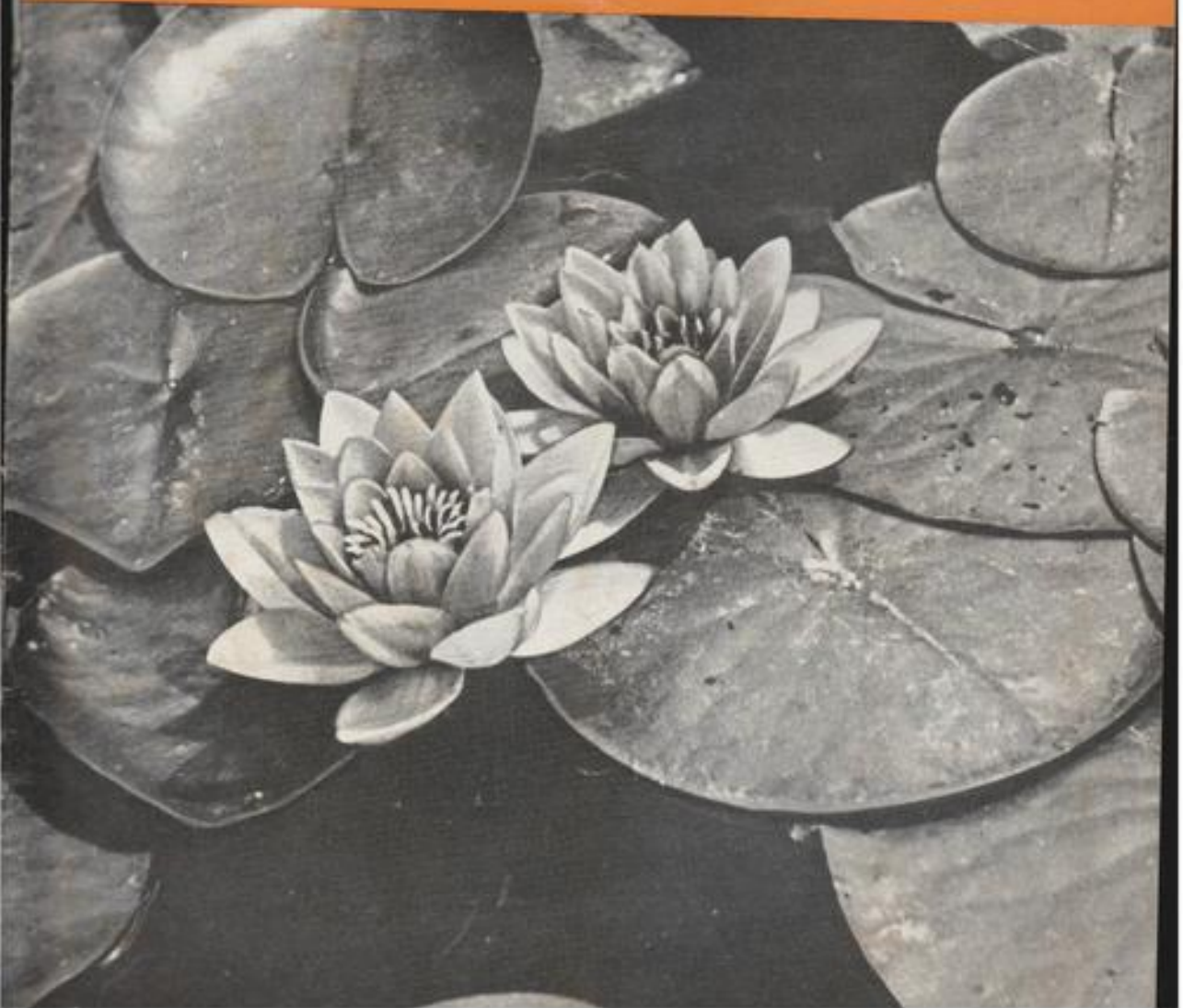


July
1968

the

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Aquarist
and Pondkeeper



The AQUARIST AND PONDKEEPER

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The Editor accepts no responsibility for views expressed by contributors.

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To the Editor: (Following is a reply from the Federation of British Aquatic Societies to the letter from the Director of the International Marine Study Society, Wiltshire, in our May issue).

Standards for marines

Our Judges and Standards Committee works to encourage the showing of all aquatic exhibits to the best advantage. This panel consists of six well known 'A' judges who co-opt from time to time any person that it knows could be of help with any proposed drawing, standard, guide, rule etc. on which they are working. These finished proposals are submitted to the Council, and then the affiliated societies for approval and acceptance before publication.

A points system for Furnished Aquaria, including marines, was first published by the Federation of British Aquatic Societies six years ago, four years before I.M.S.S. came into being, and this was used by our 'A' judges with success. (Only 'A' judges are graded to judge Furnished Aquaria). After requests from exhibitors and judges this system was revised, and has now been published and so far is proving very successful.

Marine furnished tanks are rare, and are seen only occasionally in competition, usually in the Freshwater Furnished Aquaria Classes, so the pointing system used has to be such that it stands an even chance with its freshwater competitor or exhibitors would be discouraged and marine tanks would never be seen at shows. If they can be encouraged, and our system can do this, one day we will see Marine Furnished Classes on their own.

When we were approached by I.M.S.S. for a meeting we met them. Only two of their members attended. They told us of the pointing system they were going to use for single fish entries which we were expected to accept unconditionally. We said it was too involved, and a "five sets of twenty points" as used for Tropical Freshwater would be best to start with, adapting it in time if it did not prove effective. This proposal was turned down flat. At no time was a pointing for Furnished aquaria mentioned.

We were then told that they could supply judges for us to recommend. Although we accept nominations from Societies for judges they must have had some experience of judging before we can give them a 'B' grading. Only after proving their ability at table shows and passing an open show test do we grade them 'A', and consider them suitable for open shows. We were unable to accept their offer, as having had little practical experience, we could not even consider their judges for 'B' grading.

A. G. Jessopp, Sec., F.B.A.S.

116 Lincoln Road, Slade Green, Erith, Kent.

The strange little beast from the pond

by R. T. F. Gantes and Chris Oubron

Dragonfly *Aeschna* makes a fascinating addition to the aquarium

●
A nymph greedily grasps a piece of raw meat
presented on the tip of a knitting needle.



WOULDN'T YOU like to be the proud owner of one of these charming little creatures with large loving eyes? Nothing could be easier: they live in ponds almost all over the world and all you have to do is pass a net amid the weeds and reeds to catch them in abundance.

They thrive very well in an aquarium where you can observe their graceful movements: they climb up and down the stems of their aquatic plants and walk about as comfortably on the bottom as upside at the surface, like a fly on the ceiling, by clinging to the floating vegetation.

They can swim also, either by using a sort of breast-stroke with their legs, or else by ejecting a squirt of water from their rectum that makes them shoot forwards in the manner of octopuses and cuttlefish (apart from the fact that the latter are projected backwards).

The breathing is performed through the rectum. Nature sometimes has such peculiar ideas! . . . But to compensate what we might consider a distasteful handicap, our little animal can absorb his oxygen indifferently from the air or from the water. When he is completely submerged you can see the movements of his abdomen as he inhales and exhales, and when his rectum is close enough to the bottom you can even see his "breath" stir the sand. To breathe air he rises to the surface, clings to a weed, head downwards, and pokes his rectal orifice out of the water. He then, from time to time, makes a small sizzling sound as when you drop a lump of sugar in a cup of tea.

Our little friends have a solid appetite. In their natural habitat they devour the small pond fauna: mosquito larvae, daphnia, young tadpoles, newly hatched fishes and others. To capture them, they make use of phenomenal organ called the *mask*, an articulated device resembling an arm and terminated by a pincer which they keep folded under their head. In this position the pincer is just in front of the mouth. As soon as a prey passes by, the arm shoots out and back again with the victim firmly held between the jaws of the pincer. The movement only lasts a fraction of a second and irresistibly reminds one of a chameleon's tongue. With this difference, that the mask is not a monstrously elongated tongue but the lower lip of our pretty pet! Here is something to make the loveliest "nègresse à plateaux" envious! ("Nègresse à plateau" are those African women who wear a wooden disc in a slit they make beneath their lip. They finish by getting such a large disc into the slit that they seem to be carrying a round tray in their mouth). Pretty pet then proceeds to munch his meal as we would munch an apple.

You must now think of feeding your guests. If you can

Continued on page 454



1



2



3

Dragonfly "strip tease"

1

The nymph has finally settled down on the edge of the aquarium. It has torn open the back of its old skin and has begun to emerge.

2

The imago dragonfly continues to emerge from its skin.

3

The dragonfly is now attached to its old skin by nothing but the tip of its abdomen. It will remain hanging head downwards in this position for a short while.

4

The wings are now almost their normal size. Soon the dragonfly will be able to fly.

5

The dragonfly has now completely emerged from its old skin. Two pairs of creased wings are apparent; our little larva has become a large dragonfly, or *Aeschna*. It will let its wings dangle and, under their own weight, they will expand rapidly.



4



5

and so

•
•
•
•
•

Goodbye!

6

Aeschna has fluttered on to Tiny Gantès's head to say goodbye before flying away out of the window.



The strange little beast from the pond

continued from page 452

not obtain the tiny animals that normally compose their menu you can offer them small pieces of raw meat or fish on the end of a knitting-needle. Avoid presenting pieces that are too large to start with or you might frighten them. After having overcome their shyness, they will get quite used to this new way of feeding and you will soon have the pleasure of seeing them come spontaneously towards the knitting-needle and squabble over the morsels.

If one day you notice that one of your little creatures has lost his appetite, do not worry but open your eyes: it is that he is going to shed his skin. This operation is necessary on account of the fact that his "skin" is more like a shell than a real skin and does not grow with him. The striptease only takes a few minutes. Daintily posed on stem or a weed, our

A nymph has just moulted; it is already larger than its old skin.



Nymphs squabbling over a worm.

hero cracks the back of his old suit at the level of the thorax and from that tear removes successively his thorax, his head, his legs and his abdomen. A few white threads can be seen emerging from the old skin which are the breathing tubes, equally renewed. The new animal is of a pale translucent green and seems very fragile. For a certain time he will remain in the same place, panting, before attempting a few timid and clumsy movements. But as the hours go by, *he will gradually recover strength and colour and at the end of the day will be able to resume his active life with a few millimeters more to his length that will enable him to boss those of his companions who used to bully him at meal times when he was small.*

The moulting operation is not only useful for growing purposes. It is at this moment that our friends can, if it is necessary, change their colour to harmonise it with their environment. Thus those that come from muddy ponds are mud coloured. Placed in a clean aquarium with a sandy bottom they will, after the pale green period that follows the skin-shedding, take the colour of the sand on which they now live. If replaced in their muddy pond they will become mud colour again after the following moult.

Months have passed happily and all of a sudden our darling, for no obvious reason, begins to act peculiarly; he refuses his food, sulks and tries to bring his head out of the water. You must immediately give him the means to satisfy his new whim. A pretty branch that you will stick firmly into the sand and to which he can cling will be perfect. Choose it nice and long so that it towers well above the surface. After having spent one or two days motionless, clutching on to his branch with his head above the water, our little fellow will finally make up his mind, pluck up his courage and leave the water completely. He will climb up the branch as far as he can go. Maybe he will go further if he can. When he finds a spot that satisfies him, he will stop and let himself dry. Then you will see his thorax swell and his old suit slit open following a process you already know. It will be his last moult. From the skin of your little larva a large dragonfly or *Aeschna* will now emerge. Pale and crumpled, he will quickly expand and gain strength and colour. Then he will fly away to join his adult kin and take part in that fairy air-ballet one can admire during the sunny season around the ponds almost all over the world.

A problem solved

by P. E. Pavey

It was a galling fact, yet one that had to be admitted. I had grown better aquatic plants under electric light in a gloomy basement than I was managing to grow in a sunny conservatory.

What I was producing—at a miraculous rate—was the largest quantity of giant-sized algae on the South Coast. No joke! In fact decidedly embarrassing, especially when visitors peered dubiously into my tanks, obviously doubting if any fish—let alone the ones I had been boasting about—existed in those murky depths at all. There were days when even I poked about in sudden panic. To have covered the roof of the conservatory would have meant a consequential darkening of the dining-room which it adjoins. No need to relate the family's reaction to that! Yet the algae problem had to be solved, or fish-keeping, with such attendant interests as plant growing, abandoned.

It was at this point that I must have had one of my "guilt" spasms. At any rate, I turned out the shed and thereby re-discovered my wife's old wash boiler. I remembered I had hung on to it, despite much bullying when we had moved, with a vague idea of some day removing the pump.

An idea, maggot-like, began to wriggle into life. I did battle for the pump on the lawns, and by the end of that day my algae worries were over.

Now I admit it is unlikely that everybody bedeviled by algae has an old wash boiler lurking in his shed, but such objects are to be found skulking in secondhand shops, or even friends' sheds. With such a pump, algae-ridden water can be made crystal-clear within half an hour. For the record, my pump was the type driven by a direct shaft from the motor.

Just a few other items are needed, but some of these (if you happen to be an algae sufferer) you may already have. First a jar with a lid. Mine, which is about the size of a show-jar, is made of polyethylene and cost me three shillings and sixpence. I bought it after discovering it would cost me twice that to have a one inch hole cut in a sweet jar! Note: it is important that the neck be wide enough for you to be able to insert your hand.

Four long bolts, a fraction longer than the jar itself, a sheet of perspex, two lengths of $\frac{1}{2}$ in. plastic piping and two connections, a small flower pot, and a sheet of plastic gauze are also necessary.

Screw the pump to a suitable board. The size of this will depend, of course, on the size and type of your pump and the size of your jar when it is lying on its side. Ensure it is large enough to take both comfortably. The system is going to be arranged so that the green water will be drawn from the tank, through the pump, be pushed through the filter, and—sparkling clear—back into the tank. This means that one of the lengths of $\frac{1}{2}$ in. piping will be fitted into the intake side of the pump. (My pump had a short pipe already attached to its output side, and this I fitted into a hole made in the base of the jar.) The other length

of $\frac{1}{2}$ in. piping will be connected into the lid of the jar. So now drill a hole in the lid and bottom of the jar to take the pipe fittings which will have to be sealed against the considerable pressure that builds up inside the jar when the pump is working. Glue a strip of rubber around the inside of the lid. Cut two squares of perspex about an inch larger all round than the size of the base and lid of the jar, and in each of the four corners of these cut a hole to take the bolts; also a large hole in the centre of each piece of perspex through which will be fed the pipes. The long bolts will clamp the lid to the jar in a really watertight seal. Fit a switch to one of the motor leads, and plug into the main electricity supply.

Now test! First prime your jar and pump by connecting the suction end of the pipe to the tap, and letting the water flow out the other end. Remove from the tap and plunge both pipes into a tank of water. Have the tank at a higher level than the pump. Switch on. If the jar remains watertight—and it should—switch off, and stand the jar erect. Unscrew the lid, and fill with any filter medium of your choice. It being necessary that the filter medium should not block the pipe, cut two short lengths of cane and arrange these, crosswise, in the neck of the jar. Screw on the lid again. Small fish, of course, must be prevented from coming to abrupt and unnecessary ends, so now fit the flower pot to the end of your suction pipe, and cover its mouth with plastic gauze. Secure this into position with a wide elastic band.

There are other uses for this gadget. Water can be speedily lifted from one tank to another; if you have no naturally acid pools in your district, rain water can be "peatified" for breeding purposes . . .

The possibilities, as I am happily discovering, are many.

Find the Fish

by Doreen Thiel

The first is in LORD and also in MASTER,

The second is in CORN-PAD but not in PLASTER,

The third is in KISS but not in EMBRACE,

The fourth is in DRAW and also in TRACE,

The fifth is in CHEF and also in COOK,

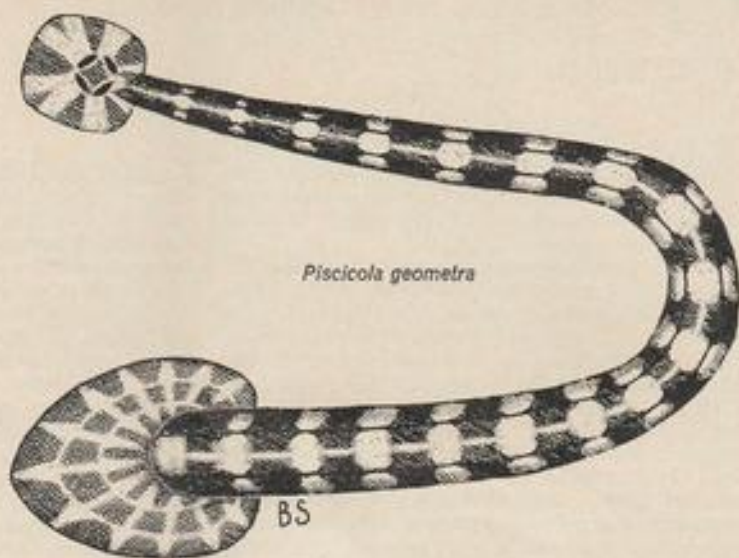
The sixth is in STREAM but not in BROOK,

The seventh is in AUTUMN but not in SPRING,

The last is in SEALING-WAX and also in STRING.

Solution on page 456

Waterlife Pests and Friends



The Fish Leech

by Bill Simms

THE AQUARIST who sees a creature like that illustrated here in his aquarium will do well to get it out as quickly as possible. It is the Fish Leech, *Piscicola geometra*, which is a pest we can well do without.

There are over a dozen kinds of leeches in our waters and all of them are harmful to some other form of water life. In particular this present leech feeds on fish of many kinds. To do this it fastens itself on, and sucks at the blood. Looking at one of these creatures it might be thought that the large end is the head end but this is not so, for it is an anchorage sucker. With this firmly fastened onto a fish the smaller end, which is the head, can be moved around to new positions for securing new supplies of blood. When moving around on a fish this leech loops itself, like a looper caterpillar, and this habit has given it the second name of "geometra," the distance measurer. On the smaller head end can be seen the four small eyes arranged in a circle. With these it can do little more than distinguish between light and dark.

Leeches, like many other lowly creatures, are hermaphrodite so that although they sometimes mate in pairs, they can carry out self-fertilisation and just one in a tank can give rise to a colony of leeches—if there are sufficient fishes to supply their nutriment.

Eggs are not laid singly but in cocoons containing a number of eggs together and from these the little leeches

emerge after hatching. At first they are very small and can easily be overlooked but with ample supplies of fish blood they grow rapidly. The fish leech reaches a length of about four inches when fully grown but at any age is a menace to fish.

In general leeches do not like light conditions, though they rarely live lower than two feet from the surface; so they favour water with plenty of cover such as water plants, or where there are plenty of stones under which they can hide. Just a few leeches can swim well by undulating the entire body, and the fish leech is one of these. Because of this facility of movement combined with the fact that they fasten onto so many living creatures that move from one stretch of water to another, they can be found almost anywhere. Add to this an almost unbelievable ability to live for extremely long periods without any food at all, and it will be realised that leeches are very well fitted to survive under almost any kind of conditions.

□ □ □

Solution to "Find the Fish"

see page 455

Answer, ROSACEUS

THE AQUARIST

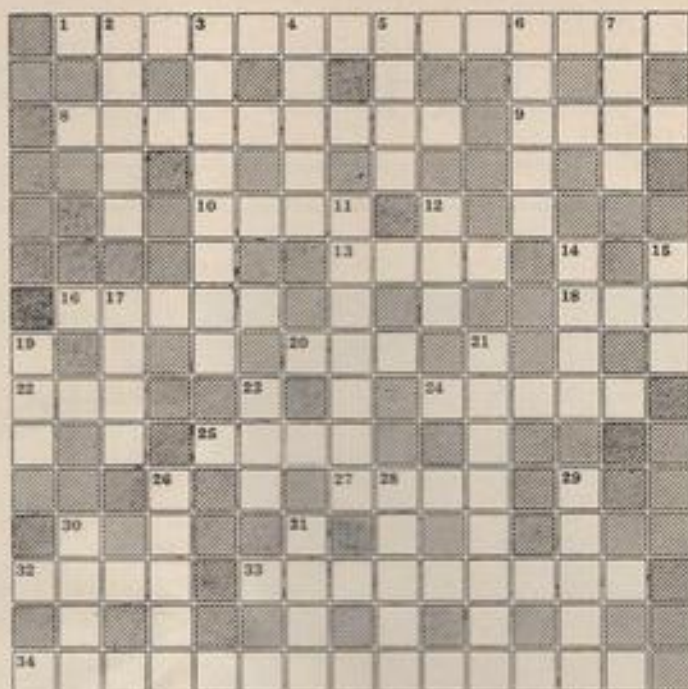
■

The "Aquarist" Crossword

No. 3

■

By G. W. DOWNES



CLUES ACROSS

1. Ned's bent petal can make these fishes (5, 9).
8. Tube (5, 4).
9. Negatives in a record going round (4).
10. Tidy (4).
13. This fish would tremble if it was given a shilling first (4).
16. A backward vessel where fishes may be caught (5).
18. Copy (3).
20. Throw (3).
22. Travel down the hill (3).
24. You might find one of these in a Bivalve (5).
25. Throw a net like the actors? (4).
27. Deer (4).
32. Cut off without a shilling and find it crumpled in the rhyme (4).
33. Young fish of the Salmon Family (5, 4).
34. Mixed cress boy in a dash with a note missing and nothing in its place forms this genus (14).

CLUES DOWN

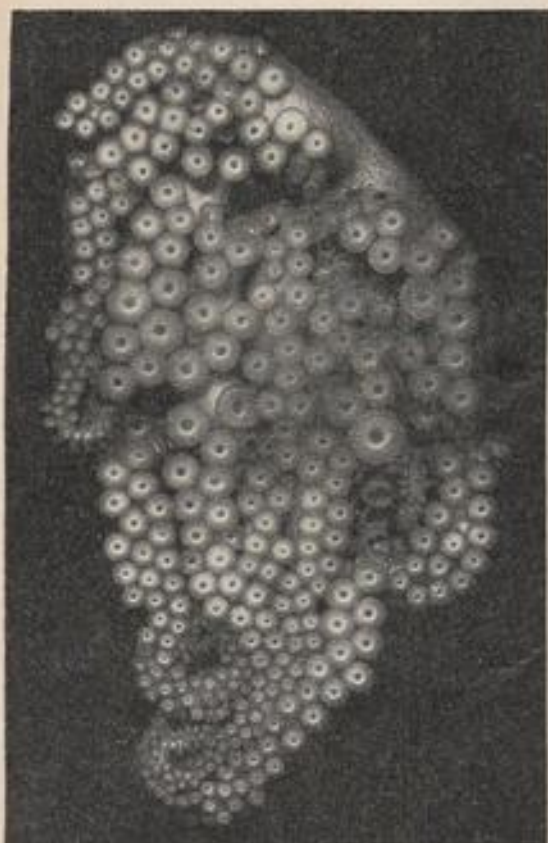
2. Maybe greet a bird (5).
3. Does this instrument go on for ever? (5).
4. Curdle-fish (5).
5. Run (4).
6. Guppy or wing (5).
7. A light fish? (4).
11. On stickle-backs they are sometimes red (7).
12. A shade of blue (3).
14. Make sure you have this before you attempt a spawning (4).
15. Short fish (3).
17. Leave out (4).
19. Inquire (3).
21. Is this a dangerous livebearer? (3, 5).
23. Hit the fish (3).
26. Doctor fish (5).
28. If you are a miller this appendage is thought to be similar to a fish (5).
29. He is probably a foreigner (5).
30. John's surname? (4).
31. Belonging to the young fish (4).

■

SOLUTION

on page 459

THE JUNIOR AQUARIST



Problem picture for the young aquarist

What is it?

Answer on page 478

Cleaning the aquarium

by B. Whiteside

REGULAR CLEANING of an aquarium prevents the not uncommon sight of the tank which has been allowed to become so dirty that to render it viewable again, the tank has to be stripped down and set up again. Such a major job can be prevented if the aquarium is given regular attention, and the tank can flourish for several years without any full scale stripping down. Although an air operated aquarium cleaner does a useful job for weekly cleaning, a more thorough cleaning is necessary every couple of months. Such an operation need not take very long if the necessary equipment is ready, and the results can bring back that fresh sparkle to the jaded aquarium.

For the person with more than one tank, two cheap plastic buckets, which are reserved for aquarium use only, are a good investment. Other necessary items are a pair of scissors, a couple of newspapers, a nylon mesh aquarium net, a pair of planting sticks, an 8 ft. length of rubber tubing of about $\frac{1}{4}$ in. bore and a scraper for removing algae growths from the aquarium glass. Before beginning, I warm about $1\frac{1}{2}$ gallons of rain or tap water to about 80°F , and place this in one of the plastic buckets. This is later used to top up the tank. I begin by placing the papers on the floor under the tank, and by switching off the aquarium heater, to avoid any risk of electric shocks. I then begin to siphon the water from the tank with the rubber tube, into the empty bucket. When the siphon is going I pass the submerged end over the whole base of the tank, removing any sediment or mulm. In the front unplanted area of the tank I also remove about $\frac{1}{4}$ in. of the gravel with the siphon tube, into the bucket of dirty water. This is the reason for the rather wide rubber tubing, as narrow tubing is quickly blocked by the gravel and this means continual pinching of the tube to release the blockage. Of course the wider bore of the tubing also speeds up siphoning. To keep the free end of the tube

in the bucket, the handle of the bucket can be rested over the tube to keep it in place, without compressing it. A tube which does not have too thick walls can be pinched to slow down or stop the flow of water, when necessary. The end of the tube in the tank should be kept on the move with the intention of removing all of the mulm and the necessary amount of gravel, before the two gallon bucket is too full to carry.

Having removed some water and gravel, the next task is to remove the rocks, if necessary, and give these a light scrub, if they are heavily coated with algae. It is probably better not to scrub them too clean as they might look rather garish in an established tank. The front glass of the tank can now be scraped clean of algae with the scraper. Some people would suggest that this job is done before the base of the tank is siphoned, but if it is, a lot of mulm is stirred up in the water and one must wait some time before being able to siphon out the dirt, after it has settled. I don't scrape the glass in the back or ends of the tank as any algae here does little harm and helps to make the tank look less synthetic and more natural. An interesting experiment can be done at this stage if a glass of aquarium water is taken out and compared with a similar glass of fresh tap water. Although the aquarium water may look clean and clear, when compared with fresh water it will probably show a brownish coloration if the tank has been in operation for some considerable time. This is one of the several reasons for regularly changing some of the water in any tank.

With the water level lowered, I then deal with the plants, starting off by removing most of the floating plants. Here the nylon net is useful in clearing out large and illusive patches of duckweed. I then root out extra plants which have multiplied too much. Old and decaying leaves and long shoots which trail over the water surface and cut out the light, are snipped off with the scissors. Top parts of the shoots can be planted as cuttings, with the planting sticks, and used to replace older plants removed. The rocks, if they have been removed, can now be replaced.

Having reached this stage, I leave the tank and deal with the gravel removed by the siphon tube. After draining off the dirty tank water and mulm, I spray a strong jet of water from the bathroom shower hose, into the gravel in the bucket. This is repeated until all the dirt, and possibly any empty snail shells, have been washed away. Be careful not to block up the drain with gravel which could wash out of the bucket. The cleaned gravel is then returned to the floor of the tank, in handfuls, and spread out evenly using the planting sticks. By now the temperature of the water in the bucket (and in the aquarium) will have dropped and should be ready for use in filling up the tank. If the bucket is placed on top of the tank, the clean water can be siphoned into the aquarium without too much trouble.

This is also a good time to check the filter and to see if it needs fresh filter wool, charcoal, peat, filter resin, etc. Having attended to this, I switch on the filter as the water in the aquarium will be slightly cloudy after these operations. Don't forget to switch the heater on again. All that remains is to clean up the room in which the tank is situated and then to sit back and view the aquarium, which should have taken on a new lease of life and which should instil into its owner that special thrill which is reserved for the keen aquarist.

July, 1968

House plants for fish houses

by D. M. S. Jones, B.A.

The Rubber Plant

Ficus elastica leaves, better known as the Rubber Plant, is a well-known and easily grown plant which can be used to good decorative effect in a fish house. It has a striking appearance, the most ones are tall and the large, dark-green leaves have a beautiful gloss.

Although the Rubber Plant is very adaptable and can become accustomed to a shaded position, it grows best in good light but it does not like direct sunshine. Once you have decided upon a suitable position for your plant it is better to leave it there rather than move it from one place to another. A steady, warm temperature is desirable and draughts must be avoided.

It is true to say that most plants are killed by over-watering than by any other cause, and this must be remembered when looking after a Rubber Plant. However, the soil must never be allowed to dry out completely, and during the spring and summer months the plant can be watered quite generously and fed with a liquid fertiliser. On the other hand, little water is required in the winter. If too much is given at this time the lower leaves will drop.

The large leaves, which are the plant's main attraction, pick up a lot of dust. To get rid of this clogging dust, and at the same time improve the appearance of the leaves, they should be sponged regularly. If a little milk is added to the water it will improve the gloss on the leaves. If repotting becomes necessary, this should be done in the spring using John Innes Potting Compost No. 2.

Solution to Crossword (see page 457)

B	E	T	T	A	S	P	L	E	N	D	E	N	S
C	R	E	E	O	E	E	E	E	E	E	E	E	
D	R	A	I	N	P	I	P	E	L	O	O	P	
E	A	I	E	E	T	N	E	E	E	E	E	E	
T	N	E	A	T	S	A	E	E	E	E	E	E	
C	H	A	K	E	P	T	E	E	E	E	E	E	
P	O	O	L	S	R	Y	A	P	E	E	E	E	
A	H	E	L	O	B	R	I	T	E	E	E	E	
S	K	I	D	A	P	E	A	R	L	E	E	E	
K	T	C	A	S	T	D	E	E	E	E	E	E	
T	B	S	T	A	G	C	E	E	E	E	E	E	
D	E	F	H	U	A	E	E	E	E	E	E	E	
H	O	R	N	T	R	O	U	T	P	A	R	R	
R	C	Y	M	P	L	E	E	E	E	E	E	E	
H	Y	P	H	E	S	O	B	R	Y	C	O	N	

What is your opinion?

by B. Whiteside

The following are some letters which were received on the subjects of algae, plants, lighting and fish foods.

Twelve year old **T. J. Kearsley**, of Higham Ferris, Northants, writes to say that he has found that some plants die off in the presence of others. Last year his brother set up a tank with equal numbers of *Vallisneria* and *Sagittaria*, but found that six months later, all the *Vallisneria* had gone and that the *Sagittaria* was thriving. The tank has no filtration or aeration and has a p.H. of 7.0-7.2, with a temperature of approximately 75°F. Some plants of *Cryptocoryne* and *Ludwigia* in the same tank are growing well.

On the subject of freeze-dried tubifex, **Mr. A. R. Cook**, of Ipswich, Suffolk, has found that although his fish at first seemed to like them, they will not now touch them at all. On the question of artificial lighting, Mr. Cook finds that tungsten bulbs are very good, at a rate of 25 watts per square foot. He does not use a cover-glass as deposits of lime, algae etc. prevent some light from reaching the plants. He has not found that any plant dies or ceases to grow in the presence of others. Mr. Cook would like to hear the opinions of other readers on the subject of the use of cover-glasses and plant growth. (I have a feeling that Mr. Cook may be on to something important here).

Mr. A. R. Coles, of Maidstone, Kent, says that plants grow extremely well in a 30 in. x 12 in. x 15 in. tank, with two 40 watt pearl lamps. He finds that pearl lamps are much better than clear ones. Mr. Coles has kept a Discus (caught wild) in a tank with other fish. The water is kept at 80°F, is fairly hard, and has a p.H. of 7 to 8. The fish is healthy and happy and feeds on live tubifex, daphnia, and dried tubifex. It also 'appears' to eat dried foods such as daphnia from the water surface and flake foods from the bottom. Mr. Coles thinks that freeze-dried foods are extremely good. He likes their variety and the fact that they are free from disease.

Mr. E. A. Morgan, of Woodseats, Sheffield, writes on the control of algae. He has two 18 in. community tanks and has had the not unusual fight against algae. About nine months ago he was forced to change his thermostat and, instead of setting it at the usual 76-78°F., for some reason he set it at 71-73°F. After a month or so he noticed the lack of algae, so he promptly lowered the temperature of the

second tank, as well as reducing the existing algae to an absolute minimum. Since then both tanks have been free from algae.

Mr. R. C. Mills, of Perivale, Middlesex, tells us that he was annoyed with algae growing only on the leaves of his plants near the surface of the aquarium water. The cutting down of illumination in the aquarium and the accidental introduction of duckweed did not improve the algae but only cut down the growth of the plants. He then switched to fluorescent lighting and noticed several changes. The algae stopped growing and the plants grew better. The introduction of sub-gravel peat at this time may have helped the change, but similar results were found in other tanks where no peat was present. The main change present was that the water temperature of the surface layers dropped in comparison with what it was with tungsten lighting, as fluorescent tubes operate at much lower temperatures. The fluorescent tubes, which were not Gro-Lux, had approximately the same light output as the bulbs, hence the reaction must have possibly been due to the drop in temperature and not to a drop in light intensity. However, the quality of the light could, possibly, have an effect on algae and plant growth in general or the increased competition from the extra plant growth could have helped to discourage the algae, as Mr. Mills states.

Some other points given by Mr. Mills, who has obviously taken a lot of scientific care and trouble with his experiments, are that 'warm white' fluorescent tubes seem to be best. He uses two 21 in. long, 1/4 in. diameter, 13 watt tubes in a four foot tank hood. Each unit, tube and control gear cost about 35/-. He also uses peat and rain water and has got good plant growth, e.g. *Vallisneria*, *Hygrophila* and *Cryptocoryne affinis* have all done very well. He states that the peat may be partly responsible but finds that in other tanks without peat, the growth is just as encouraging, particularly *Vallisneria*. Lighting is supplied for 14-15 hours per day, and the upper layers of water do not overheat as with tungsten lighting.

Regarding compatibility of plants, Mr. Mills finds that the Pygmy Chain Sword Plants did not grow, or die, in the presence of *Vallisneria*, *Sagittaria*, *Cryptocoryne* or *Hygrophila*, either with or without peat. Red *Hygrophila* does not seem to grow well in the company of its green relations, and *Myriophyllum* remains static in the same company.

Two more questions

- (1) What plants do you find are best suited to soft, acid water? (from **Master T. D. Kearsley**).
- (2) What are readers' experiences with hatching Cichlid eggs away from the parents—Angel fish in particular? (from **Mr. R. C. Mills**).



Early bloom at the pondside

by Jas. Stott

UNLESS STEPS are taken to avoid this by means of selective planting, the pond and its environs can look somewhat bleak and bare during the late autumn and through the winter months. It is for this reason, when planting the surround, a few subjects should be included which are evergreens for they help considerably to offset this tendency to bareness. Apart from the use of dwarf Conifers and evergreen shrubs, Heathers and Heaths offer greenery at this time of the year, but they are, of course, lime haters and this should be remembered by people living in limestone regions. Where soil conditions are right, however, they can be most useful in the rock edging of the surround especially the Carnea varieties such as Springwood White, *Præcox rubra* and Winter Beauty.

Plants which provide Winter or early bloom should be planted during the Summer or early Autumn to give them time to get firmly established before their first Winter to secure best results and strong growing plants. Some of the early flowering perennials often used in general gardening

can be usefully employed by the pondkeeper to give bloom in his surround and which fit into the scene perfectly.

The Hellebores can be recommended and will do well in the lower slopes of the rock edging in a south facing position. *Helleborus niger*, known affectionately as the Christmas Rose, will often produce bloom, as the name implies, at Christmas time but a sheltered position is needed for this. Although residing in the heart of the Pennines my home is situated in a south facing, sheltered valley and my *H. niger*, without cloches or covering, produces sufficient bloom each year for two or three vases for the Christmas table and still leave some on the plant. This variety is usually followed into bloom by *Helleborus cornicus* with its greenish-yellow flowers borne in clusters then comes the bloom of the Lenten Rose, *H. orientalis*, in February which will continue flowering for several weeks.

Among the Irises there are one or two species suitable for growing in the rock edging capable of providing early

Continued on page 478

Aeration of multi-tank fish houses

MANY ENTHUSIASTIC AQUARISTS who run small fish houses have discovered that problems of aeration arise which cannot easily be solved with existing equipment, either pumps or fittings. As the currently available range of air pumps generally only have limited capacity, the multi-tank user finds himself running a large number of small pumps interconnected by a jumble of small bore tubing. The problem is even greater in the case of shopkeepers and breeders who may have 100 tanks or more to supply. This was the situation facing Mr. Alan Petherick when he opened his 4 Ways Tropical Aquarium recently. In the main showroom on the ground floor over 100 tanks 24in. x 15in. x 12in. are used for display and sales to retail customers. A similar number of slightly smaller tanks occupy the Quarantine Room in the basement while nearby is the Tank Showroom containing five very large display tanks.

Alan Petherick, who imports his fish direct, intends to act as wholesaler to the trade in addition to his retailing business. He believes strongly in the value of aeration to keep fish in good condition and, in conjunction with suitable filters, to keep the tanks clean and fresh. This is particularly the case in the Quarantine Room where every imported fish spends at least two weeks prior to being offered for sale. Aeration at the 4 Ways Aquarium is based upon two twin piston pumps of large capacity supplied by the Henley Equipment Co. These pumps are situated in the basement adjacent to the Quarantine Room and the intention was for one to feed the Main Showroom and the other the Quarantine Room. In practice it was found that the showroom tanks furthest from the pumps did not receive enough air although the Quarantine Room was very well supplied.

Investigation established that the basic cause of the trouble was back pressure due to the small size of the main air feed pipes combined with the long runs involved, approx. 80 feet from pumps to furthest tanks. The showroom was laid out with $\frac{1}{2}$ in. bore tube for the main runs with $\frac{1}{4}$ in. branches from tee pieces to feed individual tanks. However, experience showed that while this size might be satisfactory in smaller premises, it had limitations when used in an extremely large aquarium such as 4 Ways. The writer proposed that all the existing pipe runs be scrapped and that a ring main circuit of at least $\frac{1}{2}$ in. bore tubing be substituted. Both pumps would be connected to a combined air receiver/filter unit and from this would be run one ring main for the showroom and another for the Quarantine Room. The Tank Showroom to have a separate $\frac{1}{2}$ in. bore run to deal with the five tanks there.

This arrangement was approved by Mr. Petherick who instructed the Henley Equipment Co. to manufacture the necessary items. These included the special air vessel and a number of special pipeline fittings to reduce from $\frac{1}{2}$ in. bore to $\frac{1}{4}$ in. As the tanks are generally arranged in

by

D. S. Henley

of the Henley Equipment Co.

See diagrams on facing page

racks of eight tanks, four tanks high, it was decided to have a four outlet fitting over each rack and drop a $\frac{1}{4}$ in. bore pipe to each pair of tanks splitting with a standard tee to feed each tank. The first part of the changeover included the fitting of the special air vessel which was temporarily connected to the existing small bore pipelines. With both pumps in operation a gauge pressure of 9 lb. p.s.i. was shown. Next the $\frac{1}{2}$ in. ring main was run around the Showroom and, when the pumps were switched on again after the main was connected, the gauge read absolutely nothing although a more sensitive gauge will probably show 1 or 2 p.s.i. The result has more than justified the effort in making the change. Plenty of air is now available at the farthest tank and apart from avoiding the danger of fittings blowing off the lower line, pressure greatly increases the pump capacity.

The lessons learned from this exercise apply equally to shops or home installations of a less ambitious nature. For any unit of more than 5 or 6 tanks it pays to run a main of at least $\frac{1}{2}$ in. bore pipe and come off with $\frac{1}{4}$ in. lines directly over the tanks being fed. Incidental advantages include the easy identification of pipelines and the avoidance of the 'jungle creepers' appearance which appears unavoidable when a large number of $\frac{1}{4}$ in. bore pipes are used. It is appreciated that the majority of small pumps have only $\frac{1}{4}$ in. outlets but these can be connected to larger bore pipe using the same $\frac{1}{4}$ in. or $\frac{3}{8}$ in. x $\frac{1}{4}$ in. fittings. The resultant free flow due to absence of pipe friction should mean a reduction in the number of pumps per installation as the pumps will not be doing work forcing air through small passages. For units of 25-30 tanks or more a single pump of adequate capacity is strongly recommended. Suitable pumps and fittings for this scale of operation can be supplied by the Henley Equipment Co. The choice of $\frac{1}{2}$ in. bore mains enables the use of cheap plastic water hose which is widely available from hardware stores.

Lay-out of

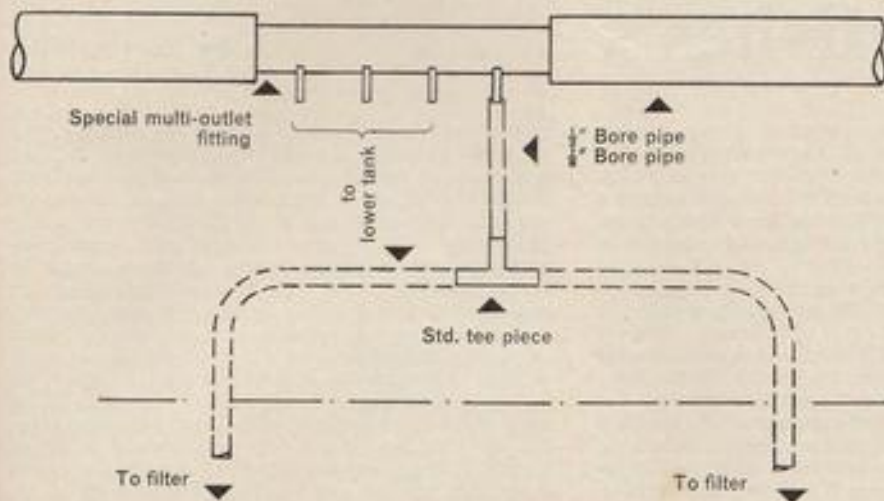
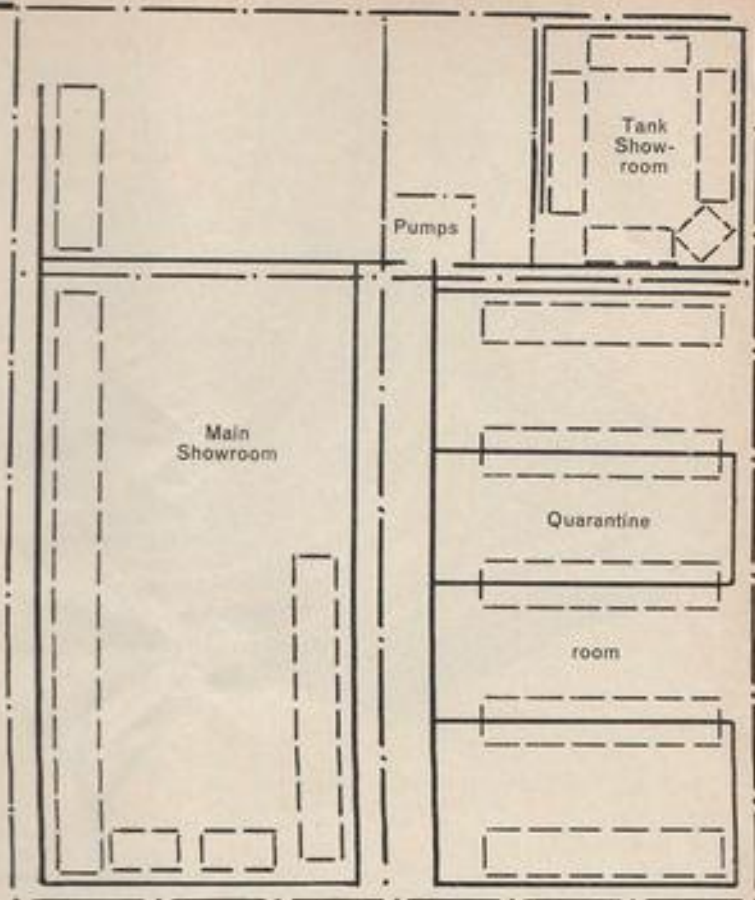
4 Ways

Aquarium,

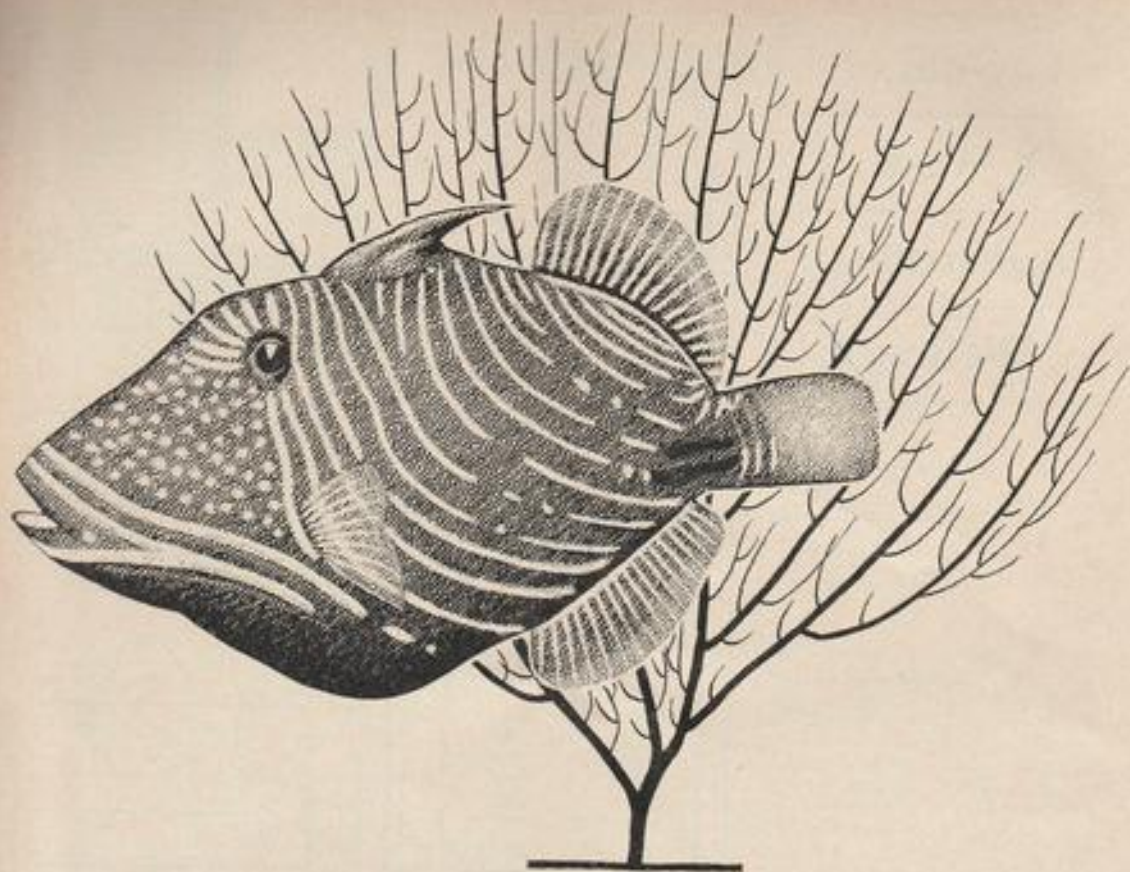
Welling

== == == == ==
Tank racks

— — — — —
Air lines



Arrangements
of outlets
over tanks



Triggerfishes

by Trevor Wild

DUE TO THE ever increasing numbers of marine converts, the more easily obtainable of the triggerfishes have steadily become great favourites in the short time they have been available in this country. However, there still remains a minority group of aquarists who do not know what a trigger looks like, and for these people the following description of them might not come amiss.

The nearest relatives of the triggerfishes are those rotund creatures, the pufferfishes. This can easily be seen by the positioning of the fins and the very small mouth. Triggers are commonly found around the Pacific coral reefs although there are a few species which inhabit the Florida Keys. Generally, they are shallow water fish but they stay close to the sea-bed. To describe the appearance of a trigger is indeed, a difficult task and so the notes must be rather long.

First we can start with the head and work back. To say this part of the fish's anatomy is large is the understatement

of the year, and anyone who has ever seen a trigger can hardly disagree. It would be far better to say the head is of enormous proportions. The eye is set practically on top of the head and is much larger than the normal eye of a fish. One quick look at the mouth shows that it is particularly miniscule and therefore only capable of managing with vegetable matter. Nothing could be further from the truth. The jaws are incredibly strong and can crush the shell of a mollusc with complete ease. Oral armament is not forgotten either, and one nip from a set of triggerfish's choppers is more than enough to remove the finger of any careless aquarist. Around the mouth are red markings which give the appearance of lipstick. These marks make the mouth look much larger and more savage looking. The rest of the body is comprised largely of stomach. This results in a fish which consists of a portion for grinding up food, and a portion for digesting it.

Onwards now to the finnage. There is a total of six fins: two dorsals, one soft, and the other spiny, a large caudal (tail), a generous anal fin and a vestige of a pelvic fin. The other fin is the pectoral. This is situated under the eye and is constantly moving.

The most interesting thing about the triggerfish is the spine in the first dorsal fin and it is this spine which has been the cause of the name of this fish. There are, in fact, three spines, but it is only the largest one which is actively involved. This spine is very large and sharp. It is raised into a vertical position and is locked there in a complicated muscle structure. The fish can erect this at will and it is used at night when the fish retires to a crevice in the coral reef. Because the spine is erected it catches in the coral and so the fish cannot be extricated by a predator or fish-collector.

To lower the spine the rays of the soft dorsal fin are lowered which returns the two smaller spines to their rest positions, which in turn pull the large erected spine down. Added to this is the fact that there is a smaller spine on the stomach of the fish and you have one of the finest defence mechanisms nature can provide. If the poor trigger dies in his crevice the scavengers do not get their free meal as the spine will stay erect. It is not uncommon to see a triggerfish skeleton in a hole in the coral with the spine still locking the remains in the same position the fish was in when it died. Our clever friend, however, is a very poor swimmer and seems more to waddle through the water than actually swim through it.

The coloration of the triggerfishes (of which about five species are commonly imported) is as ridiculous as it is brilliant. Reds, yellows, greens, blues and a myriad of other hues are to be found on each and every triggerfish. How this blends in with a coral reef is beyond my comprehension.

Members of this family are unlike other reef-dwelling fishes in that they are too large to have many predators to be afraid of. However, they do have a few enemies, number one of which is the skindiver. Don't be surprised if you find that a trigger is expensive. It's not the dealer who is making a terrific profit but the fish-collector who wants paying for the hours he's spent trying to get that stupid fish out of its tiny niche. On the subject of stupidity in fishes, I ought to clarify things here by saying that triggerfishes are among the most intelligent fish in the sea.

Triggerfishes are almost exclusively carnivorous by nature, so attempts to feed greenstuffs inevitably fail. The method these fish use to find their food is very unusual and interesting to watch. The fish swims just above the sand, its head tilted down towards the bed, and "spits" or blows jets of water at the sand. This has the effect of clearing away the sand and revealing all the worms and crabs hiding just underneath the surface. Coral often supplements the diet of triggerfishes and exercises their formidable jaws. Whole lumps of the coral rock are bitten off and the tiny living coral polyps are swallowed immediately. The hard rock is then crushed between the jaws and follows the same route as the polyps, down into the belly. No doubt the flakes improve the digestion and after passing through the intestines without any impression being left on it, the new coral sand is excreted to add to the sea-bed.

In the aquarium the triggers soon make themselves at home and find a nice quiet nook where they can activate

their spine. This is absolutely necessary as the fish will feel very insecure otherwise. Some triggers will construct their own little home-from-home by moving the entire coral population of your tank to a corner every evening and then sleep in there until next day when you put the coral pieces back to their original positions. Next evening the moving process will begin again so you might as well save your time and that of your fish by putting some more coral in the aquarium and letting your trigger remain lord of the manor.

Once your triggerfish is settled in he will require sustenance to keep him going. A delicacy enjoyed by all fish, especially triggers is the common mussel. Shellfish constitute the greater part of the trigger's diet and so, such objects as pondsnails, small crabs and shrimps (dead or alive, it does not matter which) are all taken readily. If you have a supply of earthworms your precious triggerfish will eat well and thrive. Such foods as brine shrimps are far too small to be of any nutritive value. The freeze-dried foods now on the market are excellent substitutes for live-foods, but do not become too dependent on them.

I would like now to describe in some detail, some of the more popular and obtainable triggers.

Rhinocentrus aculeatus

Without doubt, this is the most popular of the triggerfishes and it is easy to see why. The body is pale yellow above and white below. A green bar extends from the snout to the pectoral fin and a similar brown band runs from the second dorsal fin to meet the other at the pectoral. Added to this, a blue line joins the brown band to the caudal fin, and a red stripe extends from this to the second dorsal fin. The upper lip is green and the anal fin is edged with blue. All this constitutes a very pretty fish and one which is hardy to boot. This is the famous Humu-humu-Nuku-nuku-A-puaa. The name is of Hawaiian origin and can be translated as follows:—Humu-humu means a needle, Nuku-nuku translates as grunt, and the last word means a pig. This then is a fish which carries a needle and grunts like a pig. The needle no doubt refers to the spine in the trigger mechanism but where grunt and pig comes into it I do not know. To my knowledge the triggerfishes do not make any pig-like noises. Other, and more easily pronounced names are, Picasso Triggerfish, Hawaiian Trigger, and the Coral Trigger. The history of the first appellation is very intriguing and merits inclusion in this article. The artist Pablo Picasso painted a fish in such weird colours and in such an incredible shape he thought no such fish could exist. Strange to relate, this fish does exist and so the Frankfurt Aquarium named the Humu-humu after the artist, and this name is rapidly becoming the most commonly used name. It is not only found around the Hawaiian Isles but inhabits all shallow water areas of the Pacific. The Picasso Trigger, unfortunately, has one disadvantage and that is the fact that it can reach the 12 inch mark.

Balistes vetula

This is one of the few colourful triggers to come from the Atlantic and is being imported in large numbers now that triggerfishes are catching on. Commonly known as the Queen Triggerfish this, like the previous fish, can grow up to 12 inches. However, this is not likely to be a great

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Holiday arrangements

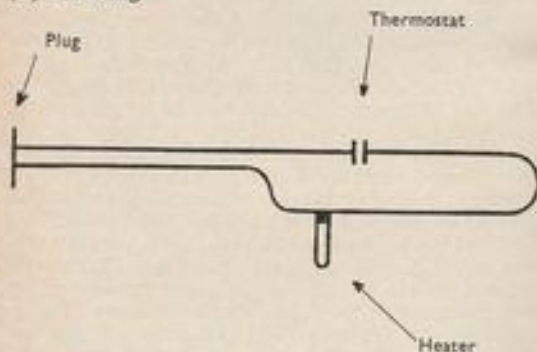
Simple plan for fish care during absence from home

SOME WHO LEAVE, during the winter, become enamoured with tropical fish keeping may be concerned for their welfare whilst they themselves are away on leave.

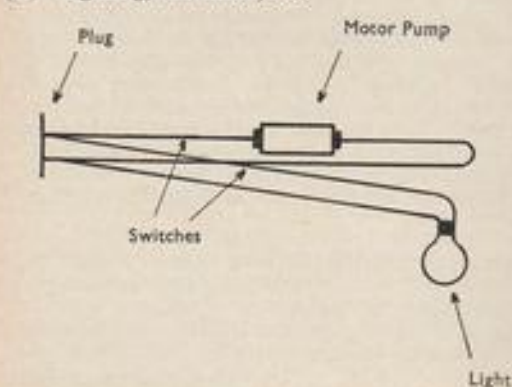
The ideal would be kind neighbours or a time switch to avoid the lack of lighting, oxygenisation and filtration during the period of one's enjoyment, but to avoid the inconveniencing of friends and others who might tend to resent the added responsibility such would involve and the heavy expenditure of the latter, the problem can be overcome at little additional expense, in fact, the purchase of two junction plugs at 1s. 6d. each at the famous High Street Store which pre-war advertised "nothing for sale over 6d." This would also be useful for those who have office aquariums during the weekend and Bank Holiday absences.

Diagrammatically, the systems most used are as shown as (A) and (B), below:

(A) Heating

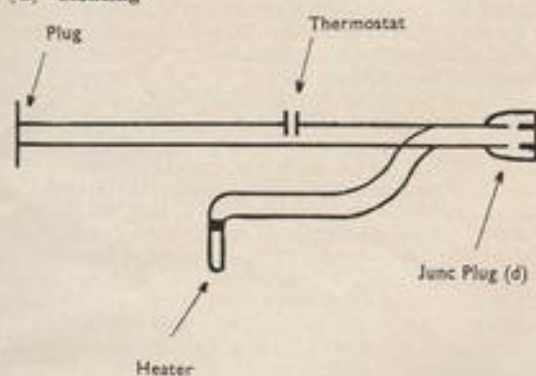


(B) Lighting, Filtration, etc.



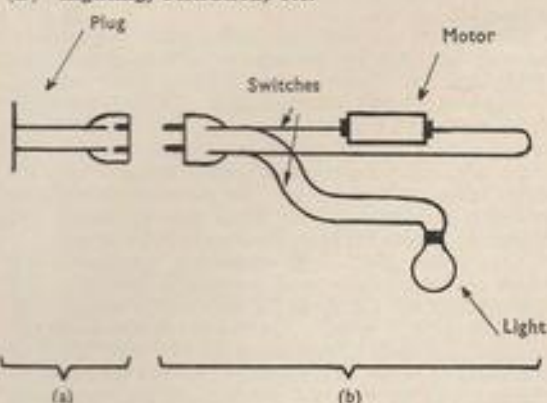
Using one portion of the junction plug, System (A) should be rewired as follows:

(C) Heating



System (B) now merely requires the insertion of a junction plug into the wiring as under:

(D) Lighting, Filtration, etc.



Systems (C) and (D) are now for normal use as shown but during absences, the plug connection (a) is dispensed with and the portion (b) is plugged into the junction plug of the System (C) so that now the thermostat not only operates the heater, but also the lighting, filtration, etc.

Dependent on the weather, the extent of the lighting, filtration, etc., will vary but although less than is normally given your fish it is adequate for short absences and more desirable than the alternative, a total absence of the amenity at a time when they are already missing your attention.

Trophies on display at the 1967 British Aquarists' Festival at Belle Vue, Manchester.

"Champion of Champions" Contest



An important reminder to Secretaries and "Best Fish" winners

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.

Winners of "Best Fish in Show" awards who have not received an entry form may apply for one by writing to us at the above address.

Entries for the Contest must be single fish (not pairs, etc.).

Other important points 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.

"New Look" for Brighton Aquarium



Left: Mr. Graham Cox.

★
*Plans for educational
and research facilities
in major development*
★

A MAJOR SCHEME of development is under way at Brighton's popular aquarium, involving a comprehensive refit and rearrangement of the exhibits, together with the installation of a dolphin pool now almost completed and which in itself has cost some £30,000.

This is enterprise on a grand scale, and aquarists everywhere will applaud the Aquarium authorities for a policy which will obviously attract wider attention and enlist new devotees to the hobby. It is even more gratifying to learn that the "new look" is not solely aimed at attracting more visitors to the Aquarium, but incorporates a definite

displays. The pillared interior falls naturally into four sections, and progress is already apparent in this direction. The exhibits will be grouped into tropical marines (seven 1,500-gallon tanks), native marines (six 1,500-gallon tanks), tropical freshwater (six 1,500-gallon and twelve 30-gallon tanks) and native freshwater (eight 1,500-gallon tanks). There is provision, too, for displaying brackish water fishes.

This grouping will be on a geographical basis, relating to the origins of the fish, and the decor and lighting of the tanks is being planned to recreate the true environment of the natural habitat—the light, plants and rocks of a South American riverbed, for instance, as the setting for specimens from that region.

Each tank will have an illuminated sign above it, showing illustrations in colour and other details to assist identification. Mr. Cox is preparing these signs himself—a not inconsiderable detail in the work-plan. Fibre-glass is being used in a novel way to build up the scenic backgrounds in the tanks, and here again the moulding and colouring is being carried out by the Director and his staff.

The chief attraction for the general public, however, will be the dolphin pool with its fascinating and amusing tenants. The preparations for the pool took Mr. Cox to Canada and the U.S.A. on a study tour, earlier this year, with most of the time spent at the modern aquarium at Niagara Falls. The outcome is to be seen in the fine pool at Brighton, opened in March and now attracting

Continued on page 476

by a Staff Reporter

educational and research purpose. It was this aspect which prompted my visit to Brighton for an enlightening interview with the Director of the Aquarium, Mr. Graham Cox.

It took only a few minutes to discern that Mr. Cox is an enthusiast, and a very knowledgeable one, and that he has a task after his own heart. It is a "monumental" task, as he described it, in bringing a 95-year-old aquarium up to date and broadening its scope. Formerly a teacher at Whitehawk School for Boys, he found his real metier in his present appointment after being an enthusiastic fishkeeper from the age of twelve. Now 30, he has steeped himself in his subject and has plans for writing a book with a special appeal to schools. It was interesting to learn that his connection with Brighton Aquarium stems from articles he wrote for *The Aquarist*, which attracted the attention of the Aquarium management and led to his appointment.

The overall plan for improving the Aquarium provides for a general reconditioning and rearrangement of the

Right: A graceful leap by one of the dolphins at Brighton, where the training programme provides popular entertainment for visitors. The dolphins, a recent addition to the Aquarium attractions, will be the subject of a later article.
(Photos by *Evening Argus*, Brighton).



July, 1968

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"New Look" for Brighton Aquarium

continued from page 468

a steady stream of visitors. The dolphins had been under their trainer, Mr. Jerry Mitchell, for less than four weeks when I saw them, and I shared with scores of delighted children the pleasure of watching them go through a series of tricks and antics incredibly varied for the brief time they have been in training. The dolphins are a subject in themselves, and one that will be dealt with in a later article.

Mr. Cox has definite opinions on what should constitute the aims and objects of a public aquarium. It must be much more than a peep-show for casual visitors; more than an educational medium, though this is important. He sees nothing incompatible in combining education with entertainment, and he has already gained the interest of many school heads in his endeavour to involve educational centres in the aquarium life at Brighton.

Beyond this, he believes that a public aquarium must function as a research and development centre, in much the same way as Kew Gardens serves the botanical world. In the past, he says, fishkeeping has been largely a hit-and-miss activity, confused by conflicting opinions. He hopes to develop it into a closely defined science, with provision for research and reference, and to create conditions for developing life-support systems which could be duplicated anywhere in the world.

The holiday visitors, however, must not be neglected and the Brighton Director seeks to give them more than "something to look at". He sees an opportunity of bringing an emotional factor to bear on their natural curiosity.

"It is already there in the preference they show for the predators," he said. "It is the octopus, the shark, the piranhas, that make the first and largest claim on their attention. They are fascinated by the grisly associations of these species, which arouse emotions of fear without its physical dangers. This can be stimulated by showing these predators in a suitable environment—the deer's skull in the piranha tank is an illustration—and so giving the visitor an emotional experience that will go deeper and evoke greater interest than would result from merely looking at a fish.

"In the same way," he continued, "we could design and decorate the tanks to induce wonder at those living jewels, the Cardinal tetras; to enchant with the subtle beauty of the Emperor tetra; amuse with the oddity of the Trigger fish and the clowning of the dolphins; a whole range of emotions responding to the stimuli we can provide in designing the tanks."

Here then, is the function of a public aquarium as Mr. Cox sees it—to satisfy the casual visitor with an interesting display; to provide facilities to education groups for teaching and study; to maintain a centre for research and reference; and to stimulate wider interest in aquarium-keeping by strengthening the emotional response to the exhibits. A formidable programme, and one deserving of the greatest encouragement.



Going through the hoop is one of the many antics performed by the dolphins after only a few weeks of training.

(In a further article, in our next issue, Mr. Cox examines the special tasks and problems in a public aquarium, including breeding, filtration, heating, feeding, and diseases.)

Equipment review

THE "BELLBRO" FLEXIBLE CLAW PICKUP TOOL

This simple but efficient tool with the complicated name is marketed by Bellranger Bros. (London) Ltd., of 306, Holloway Road, N.7, at 10s. including postage and packing. It consists of a flexible hardened steel casing containing a spring-loaded flexible rod which terminates in a three-pronged claw. When the plunger at one end is depressed, the claw is extruded and opened at the other and upon releasing the plunger the claw very strongly fastens upon objects of up to $\frac{1}{2}$ in. diameter. With an overall length of 24 in., this device has a wide range of application where small and otherwise inaccessible objects require retrieving. Its flexibility enhances its usefulness in such situations as when electrical and engineering repairs are undertaken and it is with these in mind, obviously, that the inventor produced this tool but it can be readily appreciated that the aquarist could find many uses for it when carrying out minor cleaning and clearing operations in his tanks or even in the pond. There is room for a larger edition of this handy gadget which, it is hoped, may be forthcoming when the makers are able to review the sales which are likely to result from this precursor.

Tungsten to tubes

by R. C. Mills

A FEW MONTHS AGO a rather unsightly growth of algae changed my ideas about artificial lighting. I had tried the usually recommended tip of cutting down the amount of light, but this only resulted in the plants not growing at all and the algae continued to flourish.

Also at this time I was beginning to get rather tired of continually renewing the light bulbs which seemed to 'blow' at annoyingly frequent intervals. This may have been due to the unnatural position of operation, i.e., horizontal instead of vertical, and perhaps also due to the heat developed inside the tank hood. Add to this the expense of replacing four at the same time, the tank being set up with new bulbs, and you can imagine I felt ready for a change if only to break the monotony!

I therefore decided to try my hand at converting to fluorescent lighting and set out to find out as much as I could about the requirements of the plants as to light conditions and the cost and availability of the lights themselves.

Various books to which I referred showed that plants require several different wavelengths of light for their well-being and these consisted mainly of red, blue, and yellow parts of the spectrum. I decided then that probably a 'warm white' type of tube would suffice, at least as a starting point. Indeed several aquatic books, i.e., Sterba, McInerney, T. F. H., etc., also recommended the same type.

Now came the inevitable 'shopping around'. Naturally I was aware of fluorescent lighting being available for aquarium use, Gro Lux being widely advertised in the aquatic press, but I decided against this for the following

reasons. As I never like any form of unnecessary work (who does, anyway?) I realised that if I used Gro Lux 4ft. tubes I would have to cut the ends of the hood on my 4ft. tank. This is because most hoods are inset inside the tank frames and are therefore less than 4ft. in length; this would mean that the pins on the tubes would be outside the hood, and while one may think that this is desirable from the condensation point of view, it is quickly pointed out by one's 'better half' that wires would be rather conspicuous, and also, with any young children about, rather tempting! I had seen a tank set up and whilst admitting that the colours were enhanced I must confess that I prefer my tank a bit brighter. This was mentioned by a contributor to 'What is Your Opinion?' in an earlier issue of the Aquarist in an item on plant growth and lighting where it was stated that several Gro Lux tubes would be required to equal the original tungsten lighting intensity, although normal 'warm white' tubes could be used to supplement Gro Lux for this very reason. Finally, and for the most basic of reasons, I had to turn down the luxury tubes on the grounds of cost!

These, then, were my requirements; easy to fit, cheaper (and brighter!) than Gro Lux and generally available. You will have gathered by now, that I succeeded as people never rush into print over failures.

I finally traced lights that suited my needs exactly. There are available fluorescent tubes that are 21in. long, $\frac{1}{2}$ in. diameter, 13 watt. If one does a little arithmetic, it will be seen that two would fit end to end inside my 4ft.

Continued on page 473

Diagram 1

MEASUREMENTS OF A STANDARD 24" TANK OR 48" TANK.

- a. Normal inset hood.
- b. Terry clips for holding tube (2 per tube).
- c. 21" fluorescent tube (2 used for 48" tank).

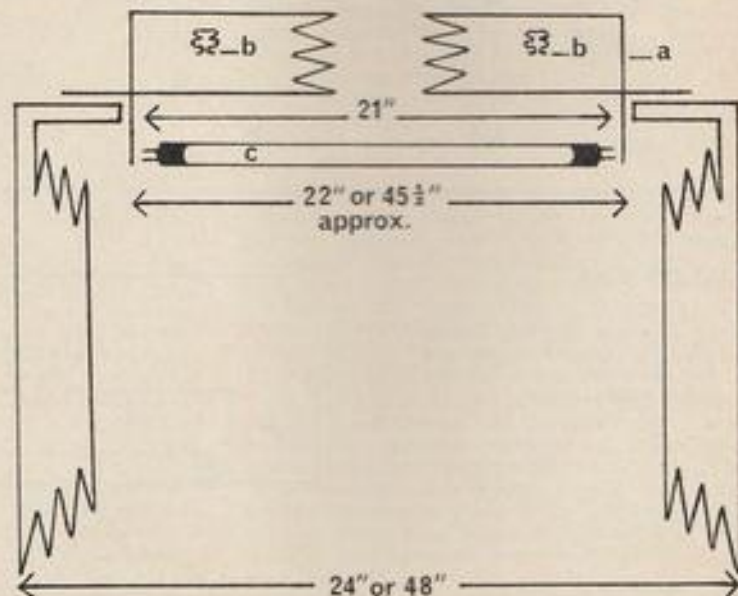
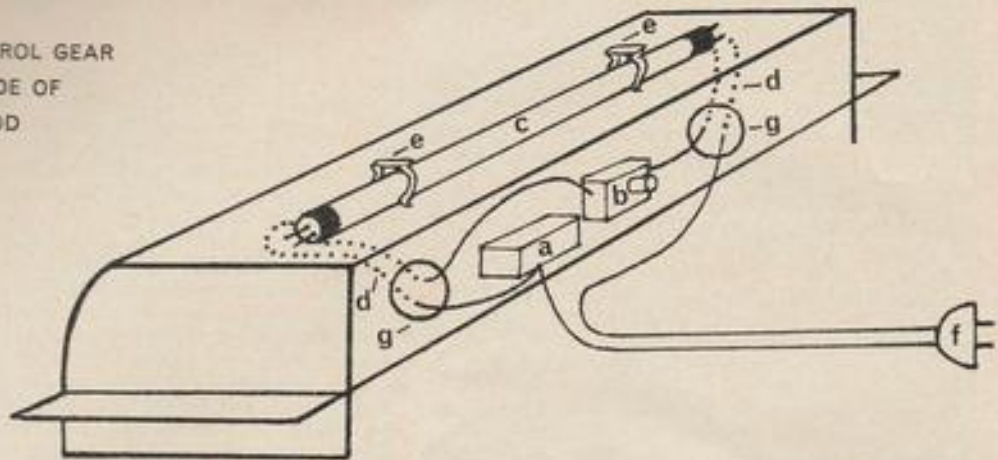


Diagram 2

FITTING CONTROL GEAR
TO OUTSIDE OF
TANK HOOD



- a. Choke b. Starter c. Tube d. Tube connectors (y) e. Tube clips f. Mains plug
g. Existing tungsten bulb holder holes

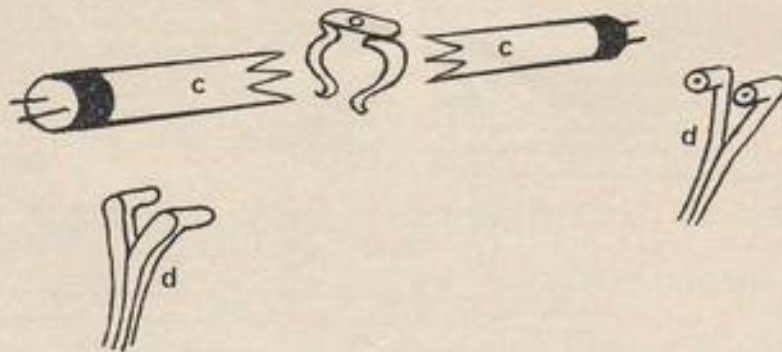
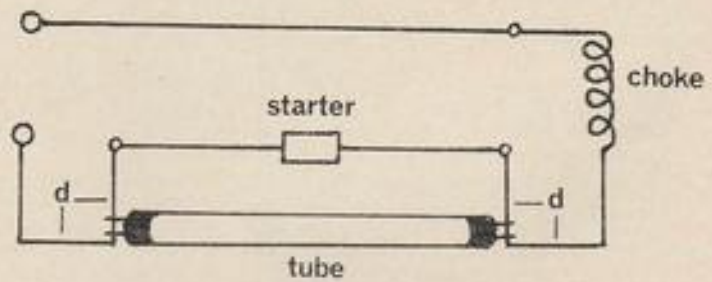


Diagram 3

CIRCUIT DIAGRAM

In large set ups the control gear is mounted remotely and the tube connectors (d) are extended as required.



Foods and feeding

I HAVE written several articles on breeding various types of tropical fish, but feel that it is more easy to breed fish than to rear them. Thinking along these lines I thought it may be a good idea to write just about feeding and perhaps it will encourage other aquarists to send in their opinions that we may all benefit.

Firstly, I start feeding the young fry on a little egg yolk. This is done by boiling an egg for 20 minutes, then mashing the yolk with a little water in a cup. I put a very small amount of this mixture on to a spoon and pour it into the young fry. If kept in a fridge the egg will keep fresh for about a week. Another method if you haven't many young fry is to put a small amount of the egg yolk in a handkerchief or some other suitable material and just squeeze a small quantity of this into the fry.

After the fish are a few days old I try to introduce some brine shrimp to them; it is quite easy to see if they are able to take this as the stomachs swell up and look quite red. As soon as they can take the brine shrimp, I also feed them micro worms. After trying several ways to breed micro the following is the method I find most successful. The micro dishes which can be purchased are the ideal containers, as the worms crawl up the sides of the dishes (which are grooved) and can be taken off easily by the small brush provided. I start the culture by mixing one of the instant hot oat cereals with a little boiling water and then add just a small quantity of milk. This should be made very stiff indeed as it seems to last much longer. Spread the mixture in the micro dishes and inoculate this with a small amount of micro worms. I purchased one culture of micro 8 years ago and have not had to buy any more since then. The cultures are best remade every 3 weeks or otherwise they start to go off.

I continue with these 3 foods plus fine fry dry food, feeding them alternately and giving them at least 4 meals per day until the fish are about 4 weeks old and as they are bred in 18 in. x 10 in. x 10 in. tanks, they are then removed to larger growing up tanks.

At this stage the above foods are no longer given and I start feeding the fish about 3 times per day with as much variety as possible. Live food seems the very best for making the fish grow quickly. The first choice in my opinion is live daphnia which must be graded and I do this by pouring the daphnia through a fine soup strainer. If the fish can be fed on daphnia at least once in 2 days, then given any of the following foods they will grow very quickly indeed. Other foods being white worm, which we purchased as breeders' packs from an advert in the *Aquarist*, good quality dry food (and most of the makes on sale at present are very good). We often purchase 2 types so that there is some slight variation in the diet. Oxheart is an excellent meat food, which we boil for about 2 hours very slowly and then mince it small; given this way it does not seem to cloud the water. I have tried feeding it raw but prefer to boil it.

Another good meat food which does not cost anything if you have chicken for dinner is the liver from it. This, once

by A. W. Skinner

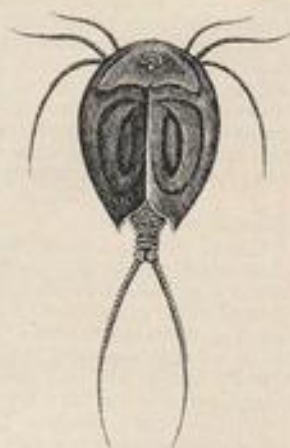
again, is boiled but not for so long and it is so soft you can just crush it with a fork.

Hard cod's roe is a food that takes no preparation as this is already boiled when purchased and all you have to do is crush a small piece into the Aquarium. Needless to say, our meal times are centred round the fish. Monday Cod's roe and chips, Tuesday Ox heart, Wednesday Chicken, etc.

Green food at least once a week seems another important factor. Either crushed peas after being boiled (2 are enough for an average tank) or spinach which we purchase in tins, either creamed spinach as given to babies or purée spinach. We have not found our fish to take to cabbage or lettuce.

Although it does not cover feeding, the other essential thing seems to be keeping the growing-up tanks clean; if possible some fresh water should be added at least once a week. Anyway, the above method is working for us. How about a few more suggestions from other aquarists and maybe we can improve the size quality of our fish.

Fairy Shrimps



Since publication it has been noticed that the drawing printed with the article on Fairy Shrimps, by Bill Simms, in the *May Aquarist* was actually of a rarer fairy shrimp, one called *Lepidurus*. Here is a drawing of the shrimp mentioned in the article, *Apus (Triops) cancriformis*. If any readers do find specimens of this, or any other fairy shrimp, Mr. Simms would be glad to hear about the find.

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

There are several Mallard ducks on a stream nearby and we are thinking of making a garden pond in the hope that they might visit it. Would it be possible to have fishes and water lilies in the pond?

It is quite possible that you could have some fishes in your pond which would not be eaten by the ducks but it is almost certain that any tender plants would be eaten by them. I put some water lilies in our local pond but they were soon destroyed by Mallard which frequent the pond. Strong growing reeds and rushes would be quite safe for the pond.

I have just taken over the responsibility of a fairly large pond which has been sadly neglected. How can I get it back to decent condition?

From your description it appears that the best way to tackle the task will be to empty the pond and clean it out thoroughly. Then when it is refilled plant it with the best of the water plants you have saved. The fish can follow later on when the water looks in good condition and the plants are growing.

I am awaiting the delivery of a large tank and wish to keep a couple of large carp in it. The tank will be 48 x 18 x 22 in.?

Although your tank is a very good size I do not recommend you to have too large fish in it. Very large specimens of carp rarely look well in a tank of your size. I suggest that two fish not more than six inches long over all are as large as you need. If one places very large fish in a tank they are inclined to look like an angler's set-up specimen and what they can do to your plant life in the tank has to be seen to be believed.

Please send me advice on breeding Green Tench?

Your best idea will be to get the book, "Coldwater Fishkeeping", as sold by "The Aquarist and Pondkeeper". This gives you all the necessary information. The fish in question breed in almost exactly the same manner as

goldfish. The males, which can be distinguished by the thickened front rays of their plevic fins, drive the females vigorously through fine-leaved water plants when the eggs are laid. The male fertilises them as they are expelled. They stick to the plants like goldfish eggs and are very similar to them in appearance but slightly larger. I first bred Green Tench in my garden pond in 1947, and some of the young ones bred themselves in 1949. The fry are rather like goldfish fry but are rather longer and darker when first hatched.

Can you tell me how long goldfish can live in a garden pond?

At least twenty years would not be out of the ordinary, some could live for much longer but it all depends on the way they are kept. In a well-conditioned water they could live much longer than in foul water. Any pondkeeper who has kept goldfish for over fifteen years will have done well but they can live much longer under ideal conditions. Over-feeding and over-crowding are the main causes of losses.

Is there any difference in breeding goldfish and shubunkins?

Shubunkins are just a variety of the goldfish and they breed in exactly the same manner. The only point to watch is that of colour, choose the darker coloured specimens as breeders and you should get some good fishes from the youngsters.

I have removed a small protuberance from a goldfish and there is a swelling where it came from. Could this be an Anchor worm?

From your description it appears that it was an Anchor worm and you should examine other fishes in the pond for further trouble.

I have become very interested in coldwater fish-keeping and have a fine tank established. I now have to move house and wonder if you can give me some advice as to how to transport everything?

Your plants will be quite safe in a large plastic bag. Tie the top of the bag so that moisture cannot escape. Get a strong cardboard carton from your local shop and a plastic bag to fit inside. Half fill the bag with water and place the fish inside. Leave plenty of air space above the water surface and tie the bag securely. The fish and plants will travel quite safely like this. See that the container with the fish is put in as cool a place as possible during transit. Do not leave water in the tank but the compost need not be removed. If your plants are well established in the tank, just empty out the water and whilst the plants are still very wet, cover the top with a plastic bag and tie very securely so that no moisture is lost. You will then find that once fresh water is run in on arrival the plants will soon buck up again and there will be no losses.

tropical fish-keeping queries answered

I have three young discus fish which are flourishing well in a 4 ft. tank. What other fishes would get on well with them?

We suggest a small shoal of cardinal or neon tetras or, perhaps, some well-marked guppies, the fry of which would provide an additional source of food.

How should I set about producing a culture of the slipper animalcule (*Paramecium caudatum*)?

This protozoan may be cultivated in a tall sweet jar or similar container. Half-fill the container with straw pushed down to the bottom, then fill up with water from, say, a long-established aquarium or a wholesome field pond. Light, but no direct sunlight, and a temperature in the lower seventies (°F) is usually productive of a thick culture before a fortnight is out.

Can any other livebearers besides *Xiphophorus helleri* change their sex?

Sex reversal is not unknown among fishes of the genera *Gambusia*, *Heterandria* and *Mollinia*.

Can you give me the scientific name and country of origin of a fish I have seen listed as a golden pheasant?

Sjoestedt's gularis (*Aphyosemion sjoestedti*) is popularly known as the golden or red pheasant. It is native to West Africa.

Is there such a fish as a dwarf paradise fish?

We have read about a dwarf paradise fish but have never heard of it being sold by dealers. We believe it goes under the scientific name of *Malpulatta kreiseri*. It is said to be indigenous to Ceylon.

How does one sex the pearl danio?

Sexing of the pearl danio (*Brachydanio albolineatus*) is not difficult in well-developed specimens; for the female has a fuller body than the male, and the male more colour in his fins than the female.

What do you suggest as a live food for the half-beak (*Dermogenys pusillus*)?

Wingless fruit flies shaken onto the surface of the water, greenfly from garden plants untouched by any chemical spray, gnats and midges and their surfacing larvae.

Is it possible for fish to produce abnormalities such as conjoined (Siamese) twins?

It is not unknown for fish to produce Siamese twins. In oviparous species they usually occur on opposite sides of the yolk sac. As this is used up so are the lives of the twins. In the livebearers, however, Siamese twins sometimes remain alive for a considerable time. But one twin will usually forge ahead at the expense of the other.

A member of my club told me that I could clear my aquarium of green water simply by introducing *Daphnia*. Surely the fishes would eat the *Daphnia* faster than the *Daphnia* would eat the free-swimming algae?

National Furnished Aquarium Exhibition

As we go to press, the Exhibition organised by K. B. Tropical Fish is being staged at St. George's Hall, Bradford. The Exhibition has involved Mr. Keith Barraclough in a major task of organisation and he is to be congratulated on an enterprise that will be an outstanding attraction to the aquarist.

The Aquarist and Pondkeeper will be represented with a stand at St. George's Hall, and a full report and pictures of the Exhibition will appear in our next issue.

The 'fleas' are given protection while they are performing their task. This may be done by confining them in a fine-meshed bag suspended in the aquarium.

Would powdered horse-manure, kneaded into moist balls of clay, make a good manure for aquarium plants?

We would not recommend such a manure or fertiliser: its use would probably lead to a rapid growth of unicellular and slimy algae. A better plan would be to use a few dried droppings of a rabbit, hamster or guinea-pig pushed into the compost near the plants' roots.

Would my golden medakas live and breed in a garden pool?

The golden medaka would be quite happy, and breed, in an outdoor pool, provided no very much larger and/or predacious fishes are present. Plenty of plants would be necessary to afford cover for the fry. Also, few, if any, snails. Bring the medakas indoors when the nights draw in and become cold from about late September.

I have a cabomba plant that has developed kidney-shaped floating leaves. Do you think this plant is botanically unique?

Lots of cabombas produce floating leaves, especially when they are about to flower. The species you have is probably *C. aquatica*, with rounded or kidney-shaped floating leaves.

I have just bought two *Danio devario*, which my dealer assures me will reach a length of 4 in. Is this correct? Also, is this fish suitable for a community tank?

D. devario will attain a length of about 4 in. It is not an aggressive species, but it is rather boisterous and is best kept apart from sluggish-moving and/or nervous fishes.

I have just taken up keeping tropical fish and I would like to know at what age is a male guppy capable of fertilizing a female guppy?

Generally speaking most male guppies are sexually potent at the age of from five to six weeks.

our readers



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

Apathetic or Satisfied?

A few months ago you were kind enough to publish my letter requesting secretaries, speakers, etc., to contact me in the hope that I would be able to prepare a comprehensive booklet devoted to details of speakers, programme aids, etc., which would make the lot of secretaries a little easier to bear. Such apathy! I have only received one reply to my plea and can only presume that our Society is the only one in the country that occasionally has difficulty in providing a first-class programme for every meeting. Many thanks to Mr. J. V. Morrice of 134 Nelson Road, Hornsey, London, N.8, whose two letters provided a wealth of details. Unfortunately the lack of any other response has resulted in my decision to abandon the project and I am left feeling slightly bewildered by the disinterest shown by so many people who in the past have lamented the dearth of good speakers prepared to travel around the Clubs.

Yours faithfully,
RON TENCH,
Chairman Warrington A.S.,
288 Manchester Road,
Warrington.

Aquarium Filling

I am writing to tell you of a method I employ in filling my aquariums. Most people lay newspaper or brown paper on the gravel when filling an aquarium to disturb as little gravel as possible. I found out that some of these papers contain inks and dyes also paper fibre which are suspended in the water.

I tried several methods of stopping this and found that if a sheet of polythene (non toxic) is used instead of the paper the water remains perfectly clean and free from dye and fibre.

I hope this may help other aquarists who may be having the same trouble.

NORMAN TYSON, (aged 15),
159 Belmont St., Newbridge Road,
Hull, E. York.

Good Neighbours

Over the past couple of months much has been written on the 'Backing Britain' campaign and its influence on the aquatic hobby. Little information seems to have been brought to the attention of the public, however, on what societies are doing to foster and promote this theme.

We in Great Britain have probably the best selection of specialist societies anywhere in the world, all of which have, for a long time, been playing a minor but nevertheless appreciable role in this field. Your readers are no doubt familiar with such names as the Fancy Guppy Association, The Goldfish Society of Great Britain, The British Killifish Association, International Catfish, and lastly ourselves of the International Marine Study Society. Most of these specialist societies have many overseas members and with all but one exception their respective journals circulate throughout the world. One only has to glance at a cross-section of the aquatic literature coming in from Europe, South Africa, Australia and the United States and one or more of these above groups are nearly always mentioned.

It is often said that Great Britain is far behind other countries in the field of aquatics—but in the field of international relations the British-founded organisations stand supreme.

It is often repeated that the most famous definition of a specialist is one who learns more and more about less and less—but look where it's getting us

Yours faithfully,
M. J. PARRY, Public Relations
Officer, International Marine Study
Society, Gabalfa, Cardiff.

Exchanges Sought

As a keen aquarist and also a philatelist, I am interested in getting aquarium products which are not available in New Zealand. If any readers are philatelists I would like to exchange stamps of N.Z. and Pacific Islands for aquarium products.

N. F. GLASSON,
Box 1393, Wellington, N.Z.

OUR READERS WRITE:

continued from page 477

Frog's Diet

As I have never yet seen it recorded that the common frog will eat raw meat, I thought I would mention that I have a specimen who eagerly does so, provided it is cut into strips and waved gently in front of her with forceps. "Froggies" came from a collector last September, and being kept at approximately 65-70°F., eats meat all the winter, twice per week, except for a month's fast from 18th January to 22nd February.

Yours faithfully,

W. G. RUFFLE,
61 Finchley Lane, N.W.4.

Brine shrimp Hatchers

Recently I have tried to set up a brine shrimp hatcher using Winchester bottles. This was only fairly successful. After reading Mr. Taylor's article, I feel I can make a greatly improved version substituting Winchester bottles for Mr. Taylor's hatchers. His article had what many lack; he talks about price, from where we can get the required materials, and more detail than usual. I'm sure this article will be found invaluable to many. I also hope we shall see more of this quality.

In Mr. Walls' article he mentions whether the aquarist miss Hydra, etc. I'm certain that most hobbyists who collect their own daphnia, etc. find it more than frustrating when hydra or other predators attack. I'm sure that most of us are thankful for the improvements in the hobby over the last years, and are only too willing to say a big 'thank you' to all people concerned in producing them.

PETER K. BROWN,
York House, Wrekin College,
Wellington, Salop.

Metric Aquarists

After reading many books on fish and plants, I decided to write this letter.

At the moment there are two ways of measuring length: metric and our system; also, there are two ways of taking temperature: centigrade and fahrenheit. As the Continent uses centigrade and metric systems, naturally it appears in their books.

Britain is changing to the metric monetary system, and some industries are changing to the metric system of measuring.

Now to get to the point. Is the aquatic hobby going to change, here in Britain, and get our books in line with those of the Continent, or are we going to stay put?

This question must be answered by aquarists and more importantly by the manufacturers. The more important question is, do we stick to fahrenheit or centigrade? This question affects us more than the one of measurement.

My answer is to remain with the fahrenheit scale as we can get a more accurate measurement of temperature, but this is really up to all British aquarists to decide.

Yours faithfully,

P. K. BROWN,
York House, Wrekin College,
Wellington, Salop.

Early bloom at the pondside

continued from page 461

colour at the pondside. The Winter flowering *Iris unguicularis* will often offer a few exquisite blue flowers should a mild spell occur around the end of December or early January while *I. danfordiwill* cheerfully contribute its golden-yellow flowers freely in February closely followed by *I. reticulata* with deep, violet flowers splashed with orange. A cluster or two of Snowdrops among the rocks at the pondside will be a welcome sight in the early weeks of the year and one of the earliest to bloom is *Galanthus byzantinus* frequently to be seen flowering on New Year's Day.

A useful plant for a shaded place where an insufficiency of light may make the position unsuitable for many other plants is *Pulmonaria* which also has the added virtue of being an early flowering subject for it is often in bloom in February. There are several varieties but I think the two best are *P. angustifolia azurea* bearing bright blue flowers and *P. officinalis* with funnel-shaped flowers, opening red at first turning to blue later. Both species have a long blooming period.

Another candidate for our list of useful early flowering perennials and which can also be used in a shaded position is *Bergenia*, a relative of the Saxifrage family. There are several varieties all possessing large, glossy, fleshy leaves and sprays of flowers, growing a foot high, in varying shades of pink depending on the variety. I think the earliest to flower and the hardiest variety is *B. cordifolia*; this should do well at the base of a rock slope in average, normal soil and be blooming in March.

Finally don't forget the Violets. Planted off the edge of the bog where the moist conditions will suit them admirably, especially if they are topped dressed with well rooted leaf mould in the late Autumn. *Askania* or *Coeur d'Alsace* are two varieties worth considering for our purpose.



What is it?

(See Problem Picture on page 458)

The photograph shows the underside of a common octopus, with the tentacle suckers seen through the aquarium glass.



BRITISH AQUARISTS' FESTIVAL

will be held this year on the
26th—27th OCTOBER

at
Belle Vue Gardens, Manchester

Stand enquiries should be made to
**Mr. G. W. COOKE, SPRING GROVE,
FIELD HILL, BATLEY, YORKS.**

THE Ostram A.S. Open Table Show was supported by twenty-two Societies who benched 265 entries. The judges were Messrs. B. Pengilly, F.N.A.S., G. Collins, F.N.A.S., P. Moonhouse, F.N.A.S. and T. Sutton, F.N.A.S. The award for Best Fish in Show went to Mr. Brian Hilton of the Stratford Society whose exhibit, a very fine guppy won for him an Aquarium donated by Rochdale Aquarium Specialist, also the Gold Badge donated by The Aquarist and Pondkeeper. The full results were as follows:

Anabantids: 1, P. & H. Gorton; 2, Mr. & Mrs. Bone (Huddersfield); 3, L. Kaye (Top Ten). **Fighters:** 1, A. G. Esteves (Top Ten); 2, C. Walker (Oldham); 3, F. Ledger (Top Ten). **Small Barbs:** 1, 2 and 3, F. Gregory (Ostram). **Large Barbs:** 1 and 3, K. Parkes (Merseyside); 2, Mr. & Mrs. Grimshaw (Sunnybrow). **Labeos and Sharks:** 1, A. Buchanan (Sunnybrow); 2, R. Moorcroft (Merseyside); 3, Mrs. J. Tonge (Oldham). **Small Characins:** 1, F. Gregory (Ostram); 2, F. Woodward (Blackpool); 3, M. Jones (Valley). **Medium Characins:** 1, S. Harrop (Ostram); 2, B. Winner (Moxenden); 3, Mrs. V. Parks (Merseyside). **Large Characins:** 1, R. Moorcroft (Merseyside); 2, Mrs. V. Parks (Merseyside); 3, R. Mulla (Merseyside). **Dwarf Cichlids:** 1, L. Kaye (Top Ten); 2, J. Roberts (Nelson); 3, N. Hague (Sunnybrow). **Angels:** 1, C. Edmonds (Salford); 2, D. Standen (Loyne); 3, R. Thomkinson (Glossop). **A.O.V. Cichlids:** 1, R. Moorcroft (Merseyside); 2, F. Mulla (Merseyside); 3, E. Lees (Ashton). **Tooth Carps:** 1, A. Buckley (Bury); 2, J. Roberts (Nelson); 3, A. Beesley (Ostram). **Rasboras:** 1 and 2, F. Gregory (Ostram); 3, D. Standen (Loyne). **Danios:** 1, G. Edmonds (Salford); 2, W. Berning (Stockport); 3, J. Roberts (Nelson). **Guppies:** 1, B. Hilton (Stratford); 2, W. Berning (Stockport); 3, J. Blamises (Huddersfield). **Swordtails:** 1, Mr. & Mrs. Grimshaw (Sunnybrow); 2, Mr. & Mrs. Bone (Huddersfield); 3, Mr. & Mrs. Ellis (Valley). **Mollies:** 1, D. Standen (Loyne); 2, F. Woodward (Blackpool); 3, M. Jones (Valley). **Platy's:** 1, S. Foley (Salford); 2, Mr. & Mrs. Bone (Huddersfield); 3, J. E. Shore (Ostram). **Loaches:** 1, W. Parkin (Huddersfield); 2, W. Taylor (Ostram); 3, A. Quinton (Valley). **Catfish:** 1, R. Tomkinson (Glossop); 2, F. Mulla (Merseyside); 3, L. Kaye (Top Ten). **Goldfish:** 1 and 2, E. W. Eadon (Sheffield). **Shubunkins:** 1 and 3, S. Walsh (Accrington); 2, Mrs. Hill (Heywood). **Veiltails and Pantails:** 1, A. Phillipson (East Lancs); 2, E. W. Eadon (Sheffield); 3, S. Walsh (Accrington). **Orandas and Lionheads:** 1, E. W. Eadon (Sheffield); 2, H. Penhall (Ostram); 3, A. Phillipson (East Lancs). **A.O.V. Coldwater:** 1 and 2, E. W. Eadon (Sheffield). **Breeders Egg-layers:** 1, I. Shepherd (Salford); 2, J. E. Shore (Ostram); 3, T. Hardman (Bury). **Breeders Livebearers:** 1, A. Beasley (Ostram); 2, Mr. & Mrs. Bone (Huddersfield); 3, J. Wood (Bury). **Furnished Jars:** 1 and 2, Mr. Shiels (Halifax); 3, Mrs. Eadon (Sheffield). **Pairs (Egg-layers):** 1, Mr. & Mrs. Webb (Salford); 2 and 3, F. Gregory (Ostram). **Pairs (Livebearers):** 1, Mrs. E. Bone (Huddersfield); 2, F. Woodward (Blackpool); 3, P. Dunster (Rochdale). **A.O.V. 1, W. Taylor (Ostram); 2, Mr. & Mrs. Grimshaw (Sunnybrow); 3, D. Standen (Loyne). Aquarium Pianos:** 1, 2 and 3, T. Hardman (Bury). **Ostram Juniors:** 1, I. Bolton (Ostram); 2 and 3, R. Wakefield (Ostram).

At the April meeting of the Enfield & District A.S. there was a panel of experts answering questions on various aquatic topics. The evening was run on the lines of I.B.C.'s Any Questions. And it was a most interesting and informative evening. The panel included Mr. B. Collins of Walthamstow and District A.S. Mr. D. King, chairman of Edmonton F.G.A.

Mr. J. Jarvis, P.R.O. of Harlow & District A.S. Mr. Mather, Secretary of Walthamstow and District A.S., Mr. J. Coleman, our own chairman. Table show this month was for Characins. Results: 1 and 2, T. Mann, (Bleeding Heart Tetras); 3, C. Gant (Bleeding Heart Tetras); 4, T. Mann (Imperator Tetra). Judging was Mr. J. Duncan of Harlow & District A.S.

The Society would like to offer Mr. and Mrs. Mather their congratulations on the birth of a daughter recently. Mr. E. Senior also of the Society is now a F.B.A.S.

The Club will be holding a Dinner and Dance at the George Hotel, Enfield, on Sunday, 21st, September. If any member of any other club would like to come tickets are available from Mr. E. Wintacker, 26 Shirley Road, Enfield at 27s. each.

THE results of the Pontefract A.S. annual show were as follows—Guppies: 1, G. P. Nash (Swillington); 2 and 3, G. Thickbroom (Pontefract). **Platy's:** 1 and 3, H. Gardner (Ind.); 2, B. Megson (Aireborough). **Swordtails:** 1, J. and H. Derris (Workop); 2, R. Robinson (Aireborough); 3, Mr. and Mrs. Howard (Barnsley). **Mollies:** 1, A. Mawson (Workop); 2, J. A. Whiteley (Aireborough); 3, J. and H. Derris (Workop). **Barbs:** 1, 2, and 3, F. E. Gregory (Ostram). **Characins (under 3 ins.):** 1, R. Robinson (Aireborough); 2, P. Sonley (Ind.); 3, R. Walker (Sheffield). **Characins (over 3 ins.):** 1, J. A. Whiteley (Aireborough); 2, B. Winner (Moxenden); 3, P. Reynolds (Swillington). **Carps and Minnows:** 1, P. Reynolds (Swillington); 2, J. A. Whiteley (Aireborough); 3, E. W. Eadon (Sheffield). **Danios and Rasboras:** 1, F. E. Gregory (Ostram); 2, F. Ledger (Huddersfield); 3, D. and B. Cohen (Pontefract). **Sharks and Flying Fishes:** 1, P. Gates (Pontefract); 2, P. Barrit (Aireborough); 3, A. G. Wyle (Halifax). **Fighters (live bred):** 1 and 2, A. E. Whitelock (Tadcaster); 3, D. and B. Cohen (Pontefract). **Fighters (multicolour):** 1, S. F. Hoxley (Pontefract); 2, A. E. Whitelock (Tadcaster). **Anabantids:** 1, P. Barrit (Aireborough); 2, A. E. Whitelock (Tadcaster); 3, P. and G. (Pontefract). **Cichlids (Dwarf):** 1, H. Cranwick (Ind.); 2 and 3, R. Walker (Sheffield). **Cichlids (Large):** 1, K. Sothorn (Barnsley); 2, Mr. Thompson (Moxenden); 3, P. Carey (York). **Toothcarps:** 1, P. Barrit (Aireborough); 2, H. Cranwick (Ind.); 3, J. W. Holmes (Tadcaster). **Catfish and Loach:** 1, R. Walker (Sheffield); 2, L. Kaye (Huddersfield); 3, P. Carey (York). **Breeders (livebearers):** 1, P. Robinson (Aireborough); 2, Mr. and Mrs. Stringer (Swillington); 3, Mrs. Garthorne (Swillington). **Breeders (egg-layers):** 1, P. Gates (Pontefract); 2, G. and P. (Pontefract); 3, P. Buxton (Barnsley). **Pairs (livebearers):** 1, Mr. and Mrs. Bone (Huddersfield); 2, J. and H. Derris (Workop); 3, Mr. and Mrs. Bone (Huddersfield). **Pairs (Egg-layers):** 1, M. H. Cooper (York); 2, J. and H. Derris (Workop); 3, A. Mawson (Workop). **A.O.V. 1, G. Birks (Swillington); 2, P. Reynolds (Swillington); 3, J. Rowell (Huddersfield). A.V. Goldfish:** 1 and 3, E. W. Eadon (Sheffield); 2, P. Barrit (Aireborough). **A.O.V. Coldwater:** 1, E. W. Eadon (Sheffield); 2, T. and T. (Pontefract). **Novice:** 1 and 2, W. Audeley (Hansforth); 3, G. Thickbroom (Pontefract). **Furnished Jars:** 1 and 3, D. Shields (Halifax); 2, Mr. and Mrs. Stringer (Swillington). **Furnished Aquarium:** 1, Mr. and Mrs. Stringer (Swillington); 2, P. Reynolds (Swillington); 3, P. and G. (Pontefract). **Best in Show:** Jack Dempsey owned by Mr. K. Sothorn.

THE annual open show results of the Sheffield and District A.S. were as follows: Guppies: 1 and 3, B. Gould (Alfreton); 2, Mr. & Mrs. Linden (Swillington). **Swordtails:** 1, J. Tunney (Stockbridge); 2, S. Watson (Sheffield); 3,

A. G. Esteves (Huddersfield). **Platies:** 1, Mrs. F. Harrison (Rotherham); 2, R. Darby (Preston); 3, R. Preston (Belle Vue). **Mollies:** 1, W. Scrimshaw (Rainsworth); 2, J. Whiteley (Aireborough); 3, J. & H. Derris (Workop). **A.O.V. Livebearer:** 1, A. Hurst (Chapelton); 2, Master S. Hurst (Chapelton); 3, J. & H. Derris (Workop). **Characins (Small):** 1, B. Jones (Workop); 2, K. Corby (Rainsworth); 3, Mrs. R. Robinson (Aireborough). **Characins (Large):** 1, J. Whiteley (Aireborough); 2, J. Mitchell (Sheffield); 3, J. & H. Derris (Workop). **Cichlids (S):** 1, P. Iveson (Aireborough); 2, J. & H. Derris (Workop); 3, Mrs. R. Robinson (Aireborough). **Cichlids (L):** 1, K. Bains (Nottingham); 2, Master D. Robinson (Aireborough); 3, K. Sothorn (Barnsley). **Barbs (S):** 1, W. Bealief (Sheffield); 2, J. Wright (Alfreton); 3, K. Riley (Independent). **Barbs (L):** 1, A. Hurst (Chapelton); 2 and 3, A. & F. Stanforth (Cresswell). **Toothcarps:** 1, D. Craven (Sheffield); 2 and 3, L. Greenhall (Tadcaster). **Carps and Minnows:** 1, R. Walker (Sheffield); 2, D. Richardson (Sheffield); 3, A. Hurst (Chapelton). **Siamese Fighters:** 1, F. Ledger (Top 10 Huddersfield); 2, A. Cockayne (Workop); 3, A. & F. Stanforth (Workop). **Labyrinth:** 1, J. & H. Derris (Workop); 2 and 3, A. & F. Stanforth (Cresswell). **Danios and Rasboras:** 1, Mr. & Mrs. Cohen (Pontefract); 2, J. & H. Derris (Workop); 3, S. Hill (Alfreton). **Breeders (Livebearers):** 1 and 2, J. & H. Derris (Workop); 3, J. Tunney (Stockbridge). **Breeders (Egg-layers):** 1, J. & H. Derris (Workop); 2, Mrs. I. Hulme (Nottingham); 3, S. Watson (Sheffield). **A.O.S. Tropicals:** 1, R. Cox (Independent); 2, C. A. Selby (Independent); 3, Mr. & Mrs. J. Howard (Barnsley). **Fancy Goldfish:** 1, E. W. Eadon (Sheffield); 2 and 3, C. Hill (Nottingham). **Goldfish:** 1 and 2, E. W. Eadon (Sheffield); 3, C. Hill (Nottingham). **Coldwater A.O.V.:** 1 and 3, E. W. Eadon (Sheffield); 2, C. Hill (Nottingham). **Catfish and Loach:** 1, R. Walker (Sheffield); 2, Mr. Ploger (Derby Show Group); 3, J. Allen (Independent). **Best fish in show:** D. Craven, Sheffield (Toothcarp). **A.Y.A.S. diploma:** D. Craven, Sheffield. **Special prize awarded by Mr. J. Hutchinson** to a Sheffield Society member with the best fish bred by him: D. Craven. There were 363 exhibitors, representing twenty-six societies and several Independent aquarists.

THE Horsforth A.S. hold its first inter-club show recently. Three other societies were invited and they were Swillington, Moxenden and Hailton. While all the fish were being judged, chairman R. Hampson showed three films, the first being "Monsters of the deep," the second "City under the sea," and the third showed some of the members' fish in their own homes. The winners were as follows: **Livebearers:** 1 and 3, P. Reynolds (Swillington); 2, Mr. and Mrs. J. M. Linden (Swillington). **Cichlids:** 1, S. F. Helm (Horsforth); 2, Mr. I. and Mrs. M. Linden (Swillington); 3, Mrs. I. Dickinson (Horsforth). **Pairs A.O.V.:** 1, R. Stringer (Swillington); 2, J. Brown (Moxenden); 3, Mrs. J. Dickinson (Horsforth). **Catfish and Loach:** 1 and 2, T. W. Audeley (Horsforth); 3, A. Jobbins (Horsforth). **Characins:** 1 and 3, M. Pollard (Horsforth); 2, Mr. J. and Mrs. M. Linden (Swillington). **Junior A.O.V.:** 1, 2 and 3, K. Kirkbright (Horsforth). **A.O.V.:** 1, V. I. Garforth (Moxenden); 2, J. Brown (Moxenden); 3, A. Pary (Hailton). **Barbs:** 1, P. Reynolds (Swillington); 2, J. Callaby (Horsforth); 3, C. Tait (Horsforth). **Anabantids:** 1, J. and M. Linden (Swillington); 2, Mrs. P. Hall (Hailton); 3, Mrs. J. Dickinson (Horsforth). **Best in show:** J. and M. Linden (Swillington). The points position is Horsforth 27, Swillington 20, Moxenden 7, Hailton 1.

THERE were fifty-nine entries at a recent Merseyside A.S. table show and the following were the results: **Livebearers:** 1, W. Smith; 2, N. Peterson; 3, J. Robinson. **Mollies:** 1, W. Smith; 2, R. Moorcroft; 3, J. Doherty. **Barbs:** 1, R. Moorcroft; 2, K. Blair-Wood; 3, N. Peterson. **Characins:** 1, J. Robinson; 2, W. Smith; 3, N. Kirkby. **Anabantids:** 1 and 3, P. Clarke; 2, J. Doherty. **Dwarf Cichlids:** 3,

2 and 3, W. Smith. Catfish: 1, J. Robinson; 2, F. Moorcroft; 3, N. Kirkby. Large Cichlids: 1, J. Dobson; 2, N. Peterson; 3, N. Kirkby. A.O.V.: 1, N. Kirkby; 2, R. Moorcroft. Pairs: 1, P. Clarke; 2, P. Calder; 3, R. Moorcroft. Rasboras: 1 and 2, D. Broadbent; 3, W. Smith. Juniors: 1 and 3, Norman Kirkby; 2, David Moorcroft.

ON the programme for the May meeting of the **Leek and District A.S.** was a lecture supplied by the **Hendon A.S.** entitled "Fishkeeping." Some nicely excellent slides accompanied by taped commentary dealt with many diverse aspects of the hobby. Results of members table show for Danios, Rasboras and Minnows were: 1, W. Ash (Zebra); 2, W. Ash (Pearl Danio); 3, F. Brockhurst (Scissortail); 4, R. Billing (Harlequin). Judging was by members F. Clowes and M. Jerrard.

THE show results of the **Bridgend and District A.S.** were as follows: Best fish in show: Piranha, G. W. Gorwill (Cardiff). Second best fish: Moonlight Gourami, B. A. Harding (Cardiff). Points coup: J. Smithson (Bridgend). Second most points: A. Ibbertson (Barry). Fighters: 1, J. Wheeler; 2 and 4, R. Jones; 3, D. Warneant. Labyrinth: 1 and 2, B. A. Harding; 3, A. Ibbertson; 4, P. A. Player. Hemigrammus and Hypentelium: 1, 2 and 3, A. Ibbertson; 4, J. Smithson. A.O.V. Characin: 1 and 4, G. W. Gerwill; 2, A. Rogers; 3, D. Warneant. Barbs: 1, P. A. Player; 2 and 4, P. B. Garner; 3, Gary Tippings. Guppy Male Longtail: 1, N. Counsell; 2, R. S. Wigg; 3, P. A. Player; 4 and 5, T. Wheeler. Guppy Male Shorttail: 1 and 3, W. D. Sonhurst; 2, J. Smithson. Guppy Female: 1 and 2, R. S. Wigg; 3, P. A. Player; 4, R. S. Wigg. Platies: 1, A. Rogers; 2 and 5, R. S. Wigg; 4, A. Ibbertson. Swordtails: 1 and 4, J. Smithson; 2, C. Harding; 3, A. Ibbertson. Mollies: 1, B. A. Harding; 2 and 4, J. Wheeler; 3, J. Parsons. Catfish and Loaches: 1, A. Ibbertson; 2, C. Harding; 3, G. W. Gerwill. Corydoras: 1, J. Sanders; 2, B. A. Harding; 3, A. Ibbertson. Dwarf Cichlids: 1, C. M. Barber; 2, D. Warneant; 3, J. Smithson. Cichlids: 1, J. Parsons; 2 and 3, G. W. Gerwill. Danios, Rasboras and Minnows: 1, A. Rogers; 2, J. Parsons; 3, J. Wheeler; 4, A. Ibbertson. Killifishes: 1, G. R. Pezner; 2, G. W. Churchill; 3, J. Wheeler. A.O.V. Egglayer: 1, P. A. Player; 2, G. W. Wheeler; 3, J. Parsons. Angels: 1, R. S. Wigg; 2, C. M. Barber; 3, M. Phillips. Breeders Livebearer: 1, J. Wheeler; 2 and 3, J. Smithson; 4, D. Warneant. Breeders Egglayer: 1 and 2, C. M. Barber; 3, J. Parsons; 4, J. Smithson. Furnished Aquaria: 1, J. Smithson; 2, R. S. Wigg; 3, C. M. Barber. Junior Egglayers: 1, T. Richards; 2, 3 and 5, N. Rowlands; 4, Byron Roberts. Junior Livebearer: 1, J. Smithson, jun.; 2, N. Rowlands; 3, P. Wheeler; 4, E. Boel. Sexed Pairs: 1, J. Smithson; 2 and 3, R. S. Wigg; 4, P. A. Player.

THE **Brent A.S.** recently enjoyed an extremely informative lecture by Len Smith of Bethnal Green A.S. on many aspects of the hobby. The results of the last table show were as follows: A.O.V. Labyrinth: 1, G. Hooper; 2, R. Fox; 3 and 4, J. Line. Swordtails: 1, P. Abbott; 2, P. Shrimpton; 3, B. Raymond; joint 4, R. Fox and P. Shrimpton. Platies: 1, R. Fox; 2, 3 and 4, T. D. Smith. Best in show: C. Hooper.

The society has planned a very interesting and ambitious programme for the second half of this year and anyone interested in joining should contact the secretary, Mr. T. D. Smith, 97 Fleetwood Road, Dollis Hill, London, N.W.10.

AT the monthly meeting of **Guildford and District A.S.**, three lectures were given by members on various aspects of breeding.

Terry Walker spoke on tiger barbs, Peter Lee of breeding in general, and Dick Aylet of his breeding attempts with *Betada Geayl*. The importance was stressed of correctly conditioning prospective pairs before mating attempts. An interesting and lively discussion followed, during which many informative and

controversial views were aired. One item in particular which caused a good deal of discussion was the advisability of keeping rain water in old oak beer barrels, the opinion of some members was that the acid content of the water could be affected by the beer impregnated wood, while others felt this was of no consequence. However, lining the barrel with polythene was considered the solution for sceptics.

Guildford and District Aquarist Society is one of the oldest clubs of its kind in the country. Originally founded about 1935 as the West Surrey Pondkeepers and Aquarists Club, the name changed to the present one in September, 1955.

Meetings are held on the second Wednesday in every month at the Guildford Trades and Labour Club, The Mount, Guildford, and the Secretary's address is: J. D. Cole, 67 Applegarth Avenue, Park Barn, Guildford.

THE London Group of the **British Killifish Association** have recently held their annual general meeting. The following are officers for the year 1968-69: Chairman, R. Armstrong; Treasurer, Kay Bullbrook; Secretary, John Open, 19 Dukas Court, 214, Peckham Rye, London, S.W.22; Show Secretary, K. Owen, Assistant Show Secretary, N. Snelling.

The retiring chairman, M. Packwood, reported a much improved membership in the past year rising from sixteen per meeting in 1966 to over thirty per meeting in 1967. The new Chairman is also programme arranger and has produced a varied schedule for the year ahead, with table shows at each meeting, slides and film shows and also fish auctions. Venues and dates for 1968 are as follows: 22nd July, 22nd September, 25th November, 200 Wandsworth Road, South Lambeth, S.W.8. 24th June, 25th August, 28th October, 29th December, Woodlands, Mycena Road, Westbourne Park Road, Blackheath, S.W. All meetings commence at 8 p.m. and visitors are very welcome.

MEMBERS of the **Aireborough and District A.S.** have been busy entering open shows, and are making their presence felt, members regularly getting firsts are: J. Whiteley, Mr. Taylor, P. Barritt, and Mrs. R. Robinson. Recently the society gained most points, competing against the local societies, at an "Inter-society show," at Swillington, and were presented with a magnificent challenge shield. This was followed up with a fine win at home, when they entertained the local societies at their own "Inter-society show," where Mr. Taylor, an Aireborough member, had best fish in show with his "Palmatochromis Guentheri."

Due to a continual influx of new members, the society now holds its meetings in larger new premises: Co-operative Hall, Guiseley, Nr. Leeds. The secretary is Mr. G. E. Walker, 2 West End Terrace, Guiseley, Nr. Leeds. Results of May table show were as follows: Barbs: Advanced—1 and 2, Mrs. R. Robinson; 3, W. Naylor. Novice: 1 and 2, J. Robinson; 3, J. Stretton. Junior—1 and 3, Master A. Fletcher; 2, Master A. Stretton. Toothcarps: Advanced—1, P. Barritt; 2, R. Lister; 3, Mrs. R. Robinson. Best fish in show: Somara Fire Barb, owned by Mrs. R. Robinson.

THE **Hull A.S.** held its first open show on the 19th May when Mr. Eadom of Sheffield won best fish in show. The meetings are held on the first and third Wednesday of the month. All visitors are sure of a warm welcome. All applications for schedules for the "City of Hull Show" to be held on 3rd August. Aquaria Section, East Park, Hull, should apply to the secretary, Hull Aquarist Society—J. Mitchell, 94 Eberington Drive, Hull.

THE date of the **Medway A.S.** open show this year is the 14th July, and the venue is the St. John Fisher School, Ordnance Street, Chatham. Attractions this year include a lecture by Dr. Cust, films and the award of the F.B.A.S. championship trophy for Plaies. All club or individual entries are heartily welcomed. Entry forms and details are available from the show secretary, Mr. J. Marshall, Chiverton,

Dartford Road, South Darenth, Kent. It is sincerely hoped that everyone will help to make this an even greater event than last year.

THIRTY-SEVEN members attended the first monthly meeting of **Tonbridge and District A.S.** in Dogeate Hall on Wednesday, 8th May. They were addressed by Mr. A. G. Josepp, chairman of the F.B.A.S., who gave a very interesting and wide-ranging talk on the hobby which ranged from identification of fish, through setting up aquaria to breeding and showing. He also answered many members' queries.

THE **Blackwater A.S.** had the privilege of hearing a lecture on fish selection and points to note at the May meeting. The speaker was E. Nicholls, a well-known aquarist from the Thurrock A.S. All members gained knowledge from this lecture. Mr. Nicholls was accompanied by a fellow member of the Thurrock A.S., D. Durrant, who kindly judged the table show for Labyrinths, the results of which were: 1 and 3, Mr. & Mrs. E. Gee (chairman); 2, G. Yellop.

AT the recently held annual general meeting of the **Gosport and District A.S.** the following officers were elected: Chairman, Mrs. J. Wright; secretary, Mr. M. J. Ellick; 5 Ankerwyke, Rowner, Gosport; treasurer, Mrs. J. Wright; committee, Messrs. Sandfield, Bridgen & Grey, Mrs. Sandfield and Master Perman. The show secretary is elected after the open show and is as at present Mr. K. Clough. Results of the table show held on the same evening were: Coldwater: 1, Mr. Sandfield; 2 and 3, Master Perman. Labyrinth and Livebearer: 1 and 2, Master Perman; 3, Mr. Ellick.

The open show is to be held on Sunday, 7th July, at the Bridgemary Community Centre, Brewers Lane, Gosport. Details from the show secretary, 16 Newport Road, Gosport.

AT the May meeting of the **Pontefract and District A.S.** members were entertained with a film show given by Mr. R. Hampson, of Horsforth, covering many aspects of fishkeeping. Results of the table show were: Cichlids: 1, F. Gates; 2, D. & B. Cohen; 3, J. Goodall. Angels: 1, F. Gates; 2 and 3, J. Goodall. Pairs Livebearers: 1, S. Thomas; 2 and 3, G. Thickbroom. Juniors: 1 and 3, Miss A. Hunt; 2, Master G. Thickbroom. The award of the month was won by Miss A. Hunt with a Blue Acara.

THE May meeting of the **Newport A.S.** was devoted entirely to subjects of interest to the beginner aquarist. The senior members of the society lecturing on such topics as "Elementary Electric," "Plants and Planting," "Community Fish" and "Diseases." The results of the table show for two classes, A.V. Barb and A.V. Cichlids were: Barbs: 1, A. J. Payne; 2, J. Lowndes; 3, D. C. Bishop. Cichlids: 1, J. Overland; 2, J. Lowndes; 3, A. Payne. Judge was Mr. Eddie Myer.

Plans for the sixth annual open show of the society to be held on Saturday, 21st September at the Duffryn Junior High School, Stow Hill, Newport, Mon., are now well advanced. Three judges have already been appointed: Mr. W. Holland (Bristol), Mr. G. Stone (Bristol) and Mr. L. Nighthingale (Keynsham).

AT a well supported dinner and social of the **Isle of Wight A.S.**, G. T. Meredith presented the annual awards and trophies to the following members: Points Challenge Cup: 1, Mrs. J. Hobbs; 2, E. T. Davison; 3, A. West. Best Tropical Fish: J. Nolan. Best Coldwater Fish: T. Bradley. Furnished Tank: S. Stevens. Best Plant: S. Stevens. Tetra Cup: E. T. Davison. Guppy Cup: S. Stevens. Ladies Cup: Mrs. J. Hobbs. Novice Cup (Tropical): R. Norman. Novice Cup (Coldwater): T. Bradley. Annual achievement: D. Crisp and I. Salter.

At the annual general meeting at the Legh Richmond Hall, Newport, the following officers were elected: Chairman, W. G. Jones; vice-chairman, D. Crisp; secretary, E. T. Davison;

89 High Street, Old Village, Shanklin, I.O.W.; treasurer, E. L. Davis; show secretary, J. Hobbs. Committee members: S. Stevens, R. Norman, J. Nolan, B. Bradley. Curator, J. Woods. Any person interested in the hobby of fishkeeping on the Isle of Wight should contact the secretary at The Aquarium Cafe, 89 High Street, Old Village, Shanklin. New members can be assured of a warm welcome at the meetings held at Leigh Richmond Hall, Newport on the fourth Wednesday of each month.

AT the third meeting of the Ealing and District A.S. the temporary committee of three months' standing was re-elected as follows: Chairman, L. Sandfield; vice-chairman, G. Inever; treasurer, D. Church; secretary, R. Barrett (8 Grove Court, Grove Road, W.5); C. Ankin; R. Sellers; Mrs. W. Church. For domestic reasons Mr. C. Rainbow was unable to carry on the post as show secretary and Mr. R. Savage was elected in his place.

During the election of committee members, the table show was judged by H. Towell, who afterwards answered questions on various subjects (including the breeding of angelfish) brought up by members. Table show results have been as follows: A.O.V.: 1, R. Savage; 2, C. Ankin, L. Sandfield; 3, B. Ankin; 4, A. Betterley. Characins: 1, R. Barrett; 2, R. Savage; 3, B. Ankin, Labyrinthia: 1, R. Barrett; 2, L. Sandfield; 3, A. Betterley. Livebearers: 1 and 3, R. Savage; 2, J. Irvine. Cichlids: 1, R. Barrett; 2, P. Carter.

THE second leg of this year's table show was held at the May meeting of the Barry A.S. and the results were as follows: Igglayers: 1, A. Ibbertson (Dwarf Gourami); 2, M. Gadd (Thick Lip Gourami); 3, G. Tipples (Tiger Barb); 4, A. Ibbertson (Schubert Barb); 5, A. Ibbertson (Bleeding Heart); 6, P. Harris (Brown Acara). Livebearers: 1, S. Nelson (Molly); 2, Mr. Kirkpatrick (Guppy); 3, A. Ibbertson (Platy); 4, Mr. Murphy (Guppy); 5, A. Ibbertson (Platy); 6, A. Harris (Molly). Junior Class: 1, Master Johnson (Kribensis); 2, Master Curnow (Thick Lip Gourami); 3, Miss Curnow (Thick Lip Gourami); 4, Master Johnson (Platy); 5, Miss Curnow (Kissing Gourami); 6, Master Curnow (Green Line Tetra). The judge was Mr. Peter Battista.

AN assembly of over forty members and guests enjoyed a pleasant evening at the May meeting of the Bournemouth Aquarists Club. The main item was provided by the chairman, Mr. B. Coombes, who gave a comprehensive talk on "Coldwater Fishkeeping." Later, he went on to mention other subjects closely connected, such as the general management of ponds and their contents, and the F.B.A.S. show standards of the fish he had mentioned. Mr. Coombes illustrated his talk with specimens of Coldwater fish and plants in a tank which he had set up for the purpose.

The table show of the month was judged by Mr. J. V. Jeffery, show secretary, and the results were as follows: Characins: 1, Mr. Cox (Bleeding Heart Tetra); 2, Mr. Cox (Moenkhausia Puzosii); 3, Mr. Poole (Cardinal Tetra). Common Goldfish: 1, Mr. Hillier; 2, Mr. Chaney; 3, Mrs. Cowdry.

THE Brighton and Southern A.S. welcomed members from Eastbourne A.S. to compete in a two-way match in which the classes were livebearers, characins and barbs with four entries per class being benched by each club. In all there were some sixty members present from both clubs and the evening was very enjoyable. Mr. Ted Jessopp was invited to officiate and having explained how he had pointed each entry declared that the home club were the winners by nineteen points to eleven. Eastbourne members were congratulated on making such a very good effort and in turning out in great numbers.

Having previously enjoyed a slide-tape lecture loaned from the F.G.A. it was decided to hire another of these which was shown earlier in the month. This was entitled "A Matter of

Breeding" and included a variety of good colour slides showing various aspects of the hobby for the beginner up to the advanced aquarist. The commentary by Mr. Jim Kelly included an explanation of water requirements, filtration and foods.

RECENTLY the Portsmouth A.S. held an inter-club table show with Worthing A.S. The classes were for Barbs, Livebearers, and Danios. The judge was Mr. R. Marley. The results were: Barbs: 1, Worthing (Spanner Barb); 2, Worthing (Golden Barb); 3, Portsmouth (Zinostus); 4, Portsmouth (Rosy Barb). Livebearers: 1, 2 and 3, Worthing (all Guppies); 4, Portsmouth (Lyrtaed Molit). Danios: 1, Portsmouth (Giant Danio); 2, Worthing (Spotted Danio); 3, Worthing (Spotted Danio); 4, Portsmouth (Pearl Danio); 5, Worthing (Zebra Danio). Worthing 20 points, Portsmouth 10 points.

The lecturer for the evening was Mr. J. Howard, who spoke on amphibians. He brought with him many specimens including an axolotl and what is believed to be a baby giant toad.

At the second meeting of the month a table show was held for Characins and Cichlids and the judge was Mr. Stillwell.

The results were: Characins: 1, C. Best (Cardinal Tetra); 2, G. Marks (Cardinal Tetra); 3, G. Marks (Hemperor Tetra); 4, G. Marks (Bleeding Heart Tetra). Cichlids: 1, S. Curnow (Severum); 2, B. Hirstead (Brown Acara); 3, G. Marks (Jewel Cichlid); 4, C. Smith (Blackface Angel). Best fish in show: C. Best (Cardinal Tetra).

The lecturer for the evening was M. Mason, who lectured on "Photographing your fish," as well as depicting how he showed slides both good and bad to show the mistakes which are made.

BRANCHING away from Tropical Fish which is the main interest of the Yate and District A.S., Mr. L. Emery, well-known breeder of coldwater fish gave an interesting talk aided by a slide film show on the many types of coldwater fishes. The construction and stocking of garden ponds as the main theme.

The table show was for Hemigrammus, Hyphobrycon and A.O.V. Characins. The results were: Open—1 and 2, F. Brown, 3, D. Noble; 4, P. Wright. Novice—1 and 2, D. Noble; 3, S. Green; 4, D. Walsh.

The club will be holding its open show on Saturday, 7th September at Christchurch School Hall, Downend, Bristol. It will be open to the public at 2.30 p.m.

AT the beginning of the show season, J. Wheeler was made most welcome at the Bristol Tropical Fish Club when he talked on the best methods of bringing fish to show conditions. Detailing with the breeding, rearing and best conditions to keep the fish in he kept the members of the club intensely interested.

The table show for this month was for Characins and Siamese Fighters with the results as follows: Open—1, J. Smith; 2, D. Flower; 3, G. Stone. Novice—1, J. Smith; 2, D. Flower; 3, B. Klimister.

THERE was a good entry for the Barton and District A.S. members closed show, with members exhibiting a high standard of Tropical and Coldwater fish. The results were as follows: Anabantids: 1, C. Parker; 2, G. Mead; 3, J. Sharratt; 4, B. Pointon. Barbs: 1, J. Hunt; 2 and 4, C. Parker; 3, H. King. Cats and Loaches: 1 and 2, H. King; 3 and 4, J. Hunt. Cichlids: 1 and 3, J. Hunt; 2 and 4, H. King. Characins: 1 and 4, J. Hunt; 2, C. Parker; 3, B. Pointon. Fighters: 1, J. Hunt. Guppies: 1, 2 and 3, J. Hunt. Mollys: 1, B. Pointon; 2, J. Hunt; 3, G. Mead; 4, H. King. Platus: 1, G. Mead; 2, 3 and 4, J. Hunt. Swordtails: 1, J. Hunt; 2, J. Sharratt; 4, C. Parker. Rabbits, Danios and W.C.M.M.: 1 and 2, J. Hunt; 3, H. King; 4, C. Parker. A.O.V. Tropical: 1, J. Quinn; 2, 3 and 4, J. Hunt. Goldfish Varieties: 1 and 2, B. Forman; 3 and 4, G.

Freeman. A.O.V. Coldwater: 1, and 4, J. Hunt; 2, A. Hunt; 3, B. Forman. Furnished Aquaria—Tropical: 1, J. Hunt; 2, H. King. Furnished Aquaria—Coldwater: 1, J. Hunt; 2, G. Mead; 3, H. King. Best Tropical: J. Hunt. Best Coldwater: J. Hunt. Best in show: J. Hunt.

OWING to circumstances beyond their control the Cheltenham and District A.S. has found it necessary to postpone their Annual Open Show until Saturday, 12th October. The venue will be at Ambulance Headquarters Hall, 86, Gloucester Road, Cheltenham.

The Society has also had a change of Secretary the new Secretary being: C. R. Surgeoner, 1, Wymans Lane, Swindon Village, Cheltenham. Phone: Cheltenham 56867.

SOME interesting information to all aquarists is contained in the May Bulletin of the Notting-ham and District A.S. The Club table show for Characins was also well supported and the results were as follows: 1, P. Bates (Black Widow); 2, G. Wood (Blind Cave Tetra); 3, Mrs. Goodfellow (Glowlight).

AT the first meeting in May of the Mid-Herts A.S. the President Dr. G. Cuth gave a talk illustrated with slides on his recent travels. This was very well received by the club members as indeed all of his lectures are. The second meeting of the month filled with a table show and film show given by T. Summers on angling. There were fifty-one entries for the table show which is even more creditable when it is remembered that three of the club members took about twenty-five entries down to Reading and District for their open show. Members have been very successful at a number of the open shows. Special mention must be made of the Herts Open as one of the members B. Davison took Best Fish in Show with his Albino Tiger Barb.

FIFTY members of the Warrington A.S. attended the first of the two monthly meetings and soon entered into the spirit of the amateur judging competition in which everyone tried to forecast the decision of the judges in the Fish of the Month Competition. A Addison's attempt was only different in one respect from the official verdict and he was awarded a voucher to spend at the local pet store. Despite initial misgivings as to whether this novel programme would hold the interest of members the evening was a complete success and thoroughly enjoyable. Results: Guppies: 1 and 2, R. Worrall; 3, A. Durr. Platies: 1 and 2, R. Tench. Swordtails: 1, T. Durr; 2, J. Selton; 3, R. Tench. A.O.V.: 1, M. Alcorn; 2, R. Tench. Mollys: 1, R. Tench; 2, D. Henson; 3, B. Worrall.

About every eighteen months the Club holds a session devoted to the fundamental principles of the hobby and the first half of the evening of the second monthly meeting saw Show Secretary J. Higham ably demonstrating the fitting of an aquarium and the cutting of glass. This was an excellent session and the programme continued to provide numerous questions and abundant discussion. Fish of the Month Result: Small Characins: 1, J. Higham; 2, A. Addison; 3, M. Baker, R. Tench; 3, T. Durr. Large Characins: 1, M. Massey; 2, R. Tench; 3, B. Rowick. Speakers who feel capable of facing an audience of discerning aquarists are invited to telephone Warrington 36939. The minimum attendance at any meeting in the past two years has been fifty and anyone willing to provide a programme is assured of a warm welcome.

THE Hoylake and District A.S. held their first annual general meeting when the following officers were elected: Chairman, A. J. Bland. Vice-Chairman, T. G. H. Wayles. Treasurer, J. Morrison. Secretary, H. Kitchen, 31, Woodmerr Road, Mohorum, Birkenhead. Chairman, Committee: J. Comb, I. Gordon, H. Davin, D. Webster, N. Mullen (Junior member). The Society meetings are held at the Y.M.C.A. Hoylake on the second and fourth Tuesdays.

A RETURN Inter-Club match was held on 13th May between the **Salisbury and District A.S.** and the **New Forest A.S.**, with the **Salisbury Club** acting as hosts.

The classes were **Corydoras Cats**, **Cichlids** and **Anabantids** and the standard of the entries was very high. The evening proved very successful, and the **Salisbury Club** had revenge over the **New Forest Club** for their defeat at a previous meeting, when the **New Forest Club** were the hosts.

SECRETARY CHANGES

Cheltenham and District A.S. C. R. Surgeoner, 1, Wymans Lane, Swindon Village, Cheltenham. Phone: Cheltenham 56867.

Heywood and District A.S. T. E. Davies, Penn Corner, 31, Rochdale Road East, Heywood, Lancs.

Hoylake and District A.S. H. Kitchen, 31, Windermere Road, Moltorum, Birkenhead, Cheshire.

CHANGE OF ADDRESS

The Secretary of **Crawley College A.S.**, Mrs. J. H. Portridge, has now moved and all correspondence must be sent to 29, Deddism Close, Furnace Green, Crawley, Sussex.

The address of Mr. G. Mead the Show Secretary of the **Burton and District A.S.**, is now 36, Chestnut Grove, Ilwaco, Derbyshire.

NEW SOCIETIES

The **Suffolk Aquarist and Pondkeepers Association** has been re-formed and the Secretary is Mr. K. Pellingham, 33, Pearcroft Road, Ipswich.

The **Matlock and District Aquarist and Pondkeepers' Society** was formed recently. The secretary is D. McDonald, 53, Overdale, Hurst Farm Estate, Matlock, Derbyshire and new members would be welcome.

A NEW aquarist society has been formed in Huddersfield to be known as the **Top Ten**

Aquarist Society. The results of the first two meetings have proved very encouraging with twenty-one members registered. Officials elected were as follows: President: J. Marsden, Secretary: L. Kaye, 6, Totties, Holmfirth, Huddersfield, Chairman: F. Ledger.

A programme of events has been arranged including an open show to be held at the Huddersfield Town Hall on Sunday, 16th March, 1969. Further details of what is being prepared for this show will be announced later.

ON Saturday, 20th April a meeting attended by thirty representatives from Aquarist Societies in Wales and the South West counties was held in Bristol.

It was unanimously decided to form a federation of societies in these areas, it being considered that those at present in existence were too remote to serve them adequately. The title of the new group will be "**The Wales and West Federation of Aquarist Societies**". The object being to establish a closer liaison between the clubs concerned particularly as to names and addresses of current club secretaries, details of those prepared to offer their services as speakers and judges etc. In course of time it is hoped to develop other items which may be of common benefit.

The officers so far elected are: Chairman, P. Brown (Bristol). Secretary, F. Barry (Bristol), 18, Foxcote Road, Ashton, Bristol 3. Treasurer, L. Nightingale (Keynsham). It is realised that some clubs in the areas which may be interested in the venture may not have been advised of the meeting. Will they please contact Mr. F. Barry, address above, in writing, and giving present address of club secretary and they will be furnished with full details.

AQUARIST CALENDAR

7th July: Tadcaster and District A.S. Open Table Show at the Roman Catholic School, St. Joseph's Street, Tadcaster. Details from R. M. Faircliff, Stutton Grove Lodge, Stutton Grove, Tadcaster.

7th July: Gosport and District A.S. Open Show

at the Bridgmay Community Centre, Brewers Lane, Gosport. Show Secretary, K. Clough 16 Newport Road, Gosport.

7th July: Peterlee A.S. Annual Open Show at the Community Centre, Eden Hill, Peterlee, Co. Durham.

12th July: Basingstoke and District A.S. Annual Open Show at the Carnival Hall, Basingstoke, Schedules from A. Marshall, 61, Pitman Close, Basingstoke.

13th-14th July: Romford and Becontree A.S., Dagenham Town Hall. All enquiries to Mr. J. M. R. Pyne, 3, Ashvale Drive, Geasham, Essex. Phone: Upminster 28435.

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

14th July: Bournemouth Aquarist Club Annual Open Show at Kinson Community Centre, Pelhams Park, Kinson. Show schedules and entry forms available after 1st May from Show Secretary, Mr. J. V. Jeffery, 39 Beasmar Avenue, Southbourne, Bournemouth.

21st July: Cleveland A.S. Open Show. Particulars obtainable from J. W. Haley, 51, Westminster Chase, Eton, Middlesbrough.

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.

28th July: Barnsley and District A.S. Open Show at the Carlton Woodmore Sports Field, Carlton, nr. Barnsley. Show schedules from Brian Laver, 61, St. Helens Street, Elsecar, nr. Barnsley, Yorks.

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, Linden Street, Mansfield.



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