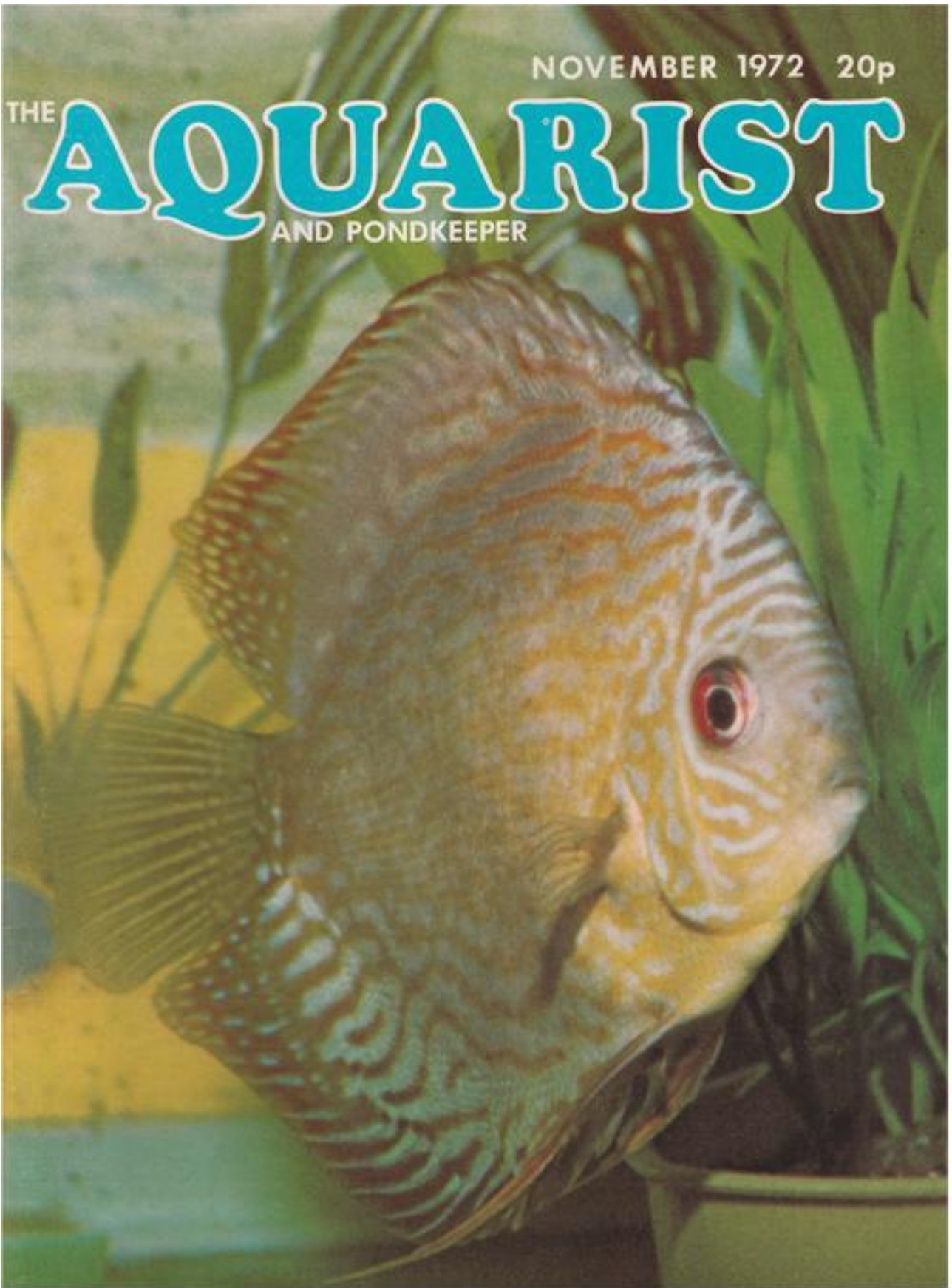


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THE

AQUARIST

AND PONDKEEPER





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AND PONDKEEPER

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See page 302.

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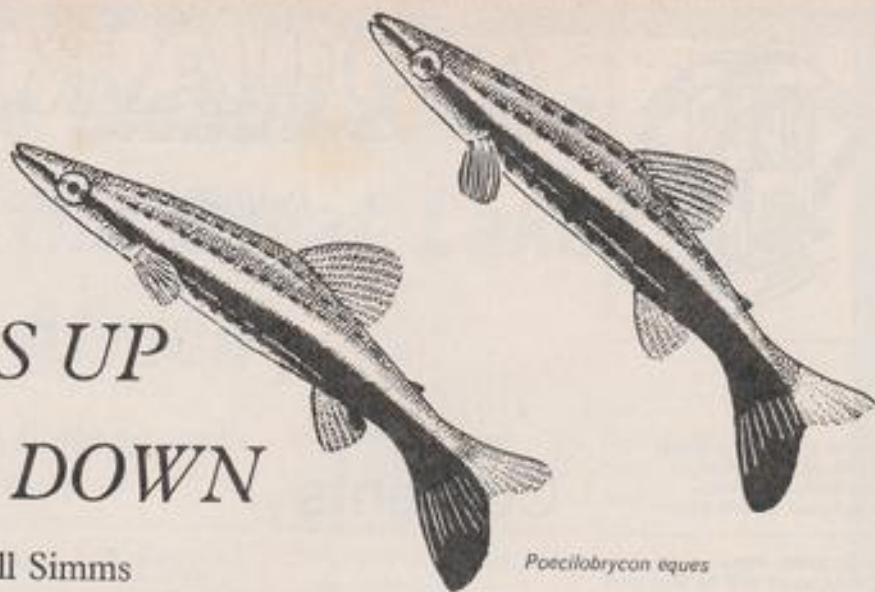
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The Editor accepts no responsibility for views expressed by contributors.

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HEADS UP —AND DOWN

by Bill Simms



Poecilobrycon eques

THE AQUARIST who sees one of his fishes swimming at an odd angle is inclined to suspect swim-bladder trouble, and in many cases he would be correct. But in the three fishes described here the odd angle taken in the water is merely a peculiarity of that species—probably adopted in the first instance as a camouflage measure.

With a normal swimming angle of 45 degrees or thereabouts, the Pencilfish, *Poecilobrycon eques*, sometimes described under the name of *Nannobrycon eques eques*, is one of the kinds that swims head upward. This stance is maintained for all normal movements, but when the fish is startled or excited it will assume a normal horizontal position long enough to swim rapidly out of danger.

Collectors who have seen this fish in the wild—it lives in Guiana and the Amazon basin—say that it is extremely difficult to spot because of its position in the water. Normally it congregates in small shoals, and these shoals drift along in the water, concealed by their resemblance to the vegetation around them. They look like pieces of leaf or twig, and maintain this appearance even when swimming along slowly. Gentle movements of the smaller upper tail lobe and its other fins waft it along smoothly in a manner reminiscent of the sea horse. Internally, the swim bladder is larger towards the front of the fish, and this helps it maintain this position.

In the aquarium three or four pencilfish should be kept together, for they are never really happy except in a small school. This is a shy fish, about 2 in. long, with various brown shades forming the well-marked

pattern on its sides. It may be noticed that the upper lobe of the tail, which is the part used when swimming slowly upward, is practically transparent. Strongly coloured areas keep perfectly still, while transparent fins are used to move it along, all of which helps to keep it inconspicuous.

Because it floats in the upper and middle reaches of the water, where the temperature is usually higher than at the bottom, the pencilfish does best in about 78°F. The water should be fairly soft, and the pH should be neutral or slightly acid. Plenty of vegetation of the long grass-like type helps them to feel at home.

Food for the pencilfish should be of the kind that stays near the surface, for anything below them is usually ignored. Live food of many kinds is taken readily, but there appears to be a preference for *enchytrae*. It is normal to use a pair only of these fish for breeding, and the temperature may be run up three or four degrees. When in breeding condition, the female lays her eggs on the underside of leaves, and for this reason some of the narrow-leaved *cryptocoryne* plants may be used.

The parents will eat some of their own eggs at times, but those that fall from the plant are ignored. Because of this some breeders use a layer of glass marbles or large gravel with a plant set in a pot in the middle. Attempts are then made to dislodge the eggs from the plant leaves, so that the parents cannot get at them. There are about 50 eggs, and after the spawning is over the parents should be removed. It will be seen when this is tried that these stiff-looking fish can move fast when they want to.

The fry take about 24 hours to hatch out, but are not free-swimming for about six days. It is advisable during this hatching period to darken the tank a little. When the tiny fragile fry start moving around the darkening should be removed, and very tiny live food offered. Infusorians should be given freely, for this is all their small mouths can manage at first. They grow very slowly, but with care many of the brood can be reared.

The Spotted Headstander, *Chilodus punctatus*, also sits at an angle in the water, but with quite a few differences. Instead of head up it is head down, and this different stance is not always at the same angle, for it may be just a tilt, and at other times almost upside down. When disturbed in any way, and again when breeding, it adopts the normal horizontal swimming position of most fish, but for its normal moving round it remains head down.

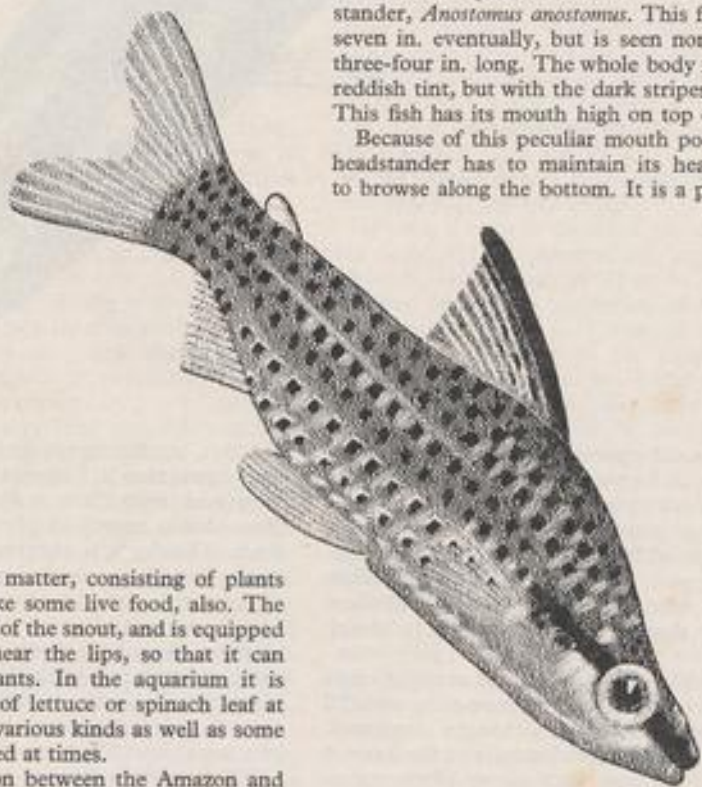
This, of course, tends to make it a bottom feeder, but it would be truer to say it feeds from the middle reaches to the bottom, usually on food that is below it.

needed by the pencilfish, and the two species will do well together—often causing some amusement because of their opposed positions in the water. The Spotted Headstander reaches about 3½ in. long.

Tanks well furnished with plenty of *callisneria*-type plants are suitable for keeping or breeding these fish. A good clear swimming space should be arranged centrally in the tank, and the temperature should be increased by two or three degrees. Place some lettuce leaf on the surface for the pair to nibble. An active pair should be introduced. When spawning there is a change in coloration, for a large round dark shoulder spot appears, and the rows of dots pale somewhat. The eggs are non-adhesive, falling to the bottom without the parents molesting them, but remove the parents after spawning. The eggs hatch after about 4 days, but the youngsters are difficult to see at first. Tiny creatures such as newly hatched brine shrimps should be offered, as well as shredded spinach, but take care not to foul the water.

A somewhat larger fish with similar habits and stance to the spotted headstander is the Striped Headstander, *Anostomus anostomus*. This fish reaches about seven in. eventually, but is seen normally when only three-four in. long. The whole body is suffused with a reddish tint, but with the dark stripes showing clearly. This fish has its mouth high on top of the snout end.

Because of this peculiar mouth position the striped headstander has to maintain its head-down position to browse along the bottom. It is a partial vegetarian,



Chilodus punctatus

This is mainly vegetable matter, consisting of plants and *algae*, but it does take some live food, also. The mouth is small, at the end of the snout, and is equipped with many small teeth near the lips, so that it can browse effectively on plants. In the aquarium it is usual to provide a piece of lettuce or spinach leaf at all times. Dried foods of various kinds as well as some live foods will be welcomed at times.

Coming from the region between the Amazon and the Orinoco this fish needs a temperature somewhere between 72 and 82° F., and with slightly acid to neutral pH. The water should be very soft. It will be noticed that these conditions are similar to those



Anostomus anostomus

and therefore would appreciate occasional meals of chopped spinach. A simple method of providing this is to use the baby food on sale at the chemists. It will be found to be most popular, and very nutritious. In addition, all kinds of live food should be given regularly, as well as some dried and frozen foods. When picking up food from the bottom this fish will adopt an almost upside down position because of its mouth placing.

Once again, soft water with a neutral or slightly acid pH appears to suit it best, and because of its peaceful ways it can be kept with the other species mentioned. However, it is a larger fish, and requires a fair amount of room—in a large tank with plenty of vegetation around the sides. The temperature should be about 76° F., for it comes from tributaries of the Amazon in British Guiana.

I cannot find any details of successful spawning of

this fish, but feel that it should be conquered soon. If I was attempting it I should provide a very large and deep tank, with three or four levels terraced off with large stones, as well as plenty of *vallisneria* along the back. The depth is suggested because some of these larger fish may not feel content enough to breed without the stimulus of depth, with its consequent higher pressure of water. At spawning time these fish abandon their head-down posture to dart about the tank, and so it is possible that they require a very large aquarium in order to have a feeling of security. Because this fish grows so large I should choose a pair that are at least 5 in. long for any spawning attempt.

All these three species, with their quaint swimming angle, are attractive in any mixed aquarium, but it would be well to avoid placing them with fish that are known to be aggressive. And remember that they prefer to be with others of their own kind.

WIRING FISH TANKS FOR CONVENIENCE

by D. M. Hawcroft, B.Sc., Ph.D., and J. C. Stewart, B.Sc., Ph.D.

WHILE many aquarists enjoy almost continually rearranging and adjusting their fish tanks, there are undoubtedly a large number of people keeping fish who would like their tanks to be as trouble-free and needing as little attention as possible. In this category come those with perhaps one or two tanks kept mainly for their appearance in a living room or hall, people who are interested in spending the maximum time breeding or otherwise cultivating fish, those who keep a very large number of tanks, and tanks set up in shops and offices.

This article discusses two ways in which a tank can be wired electrically to help automate its function. The first suggestion involves simplifying the operating of a pump/aeration/filter system and the second a means of controlling the lighting of a tank to ensure good plant growth.

It is generally accepted that to maintain a clean, attractive and healthy tank a filtration system is required to remove particulate material, decomposition products and waste from the water. To prevent a temperature gradient from building up and in order to keep the maximum number of fish, an aeration system is usually deemed necessary. In most tanks these are combined, a suitable pump driving a filter and also providing aeration to the tank through an airstone. It is perhaps ideal to leave the pump operating continuously but the cost of this is not negligible especially if several tanks are in operation, and, providing the tanks are not carrying a very large population of fish, it is, in the authors' opinion, not essential.

To avoid having to remember to switch the pump on and off at regular intervals it is possible to wire the pump into the electrical circuit so that it is operated by the thermostat. Thus, when the thermostat is closed, electricity will flow to *both* the heater and the pump. On opening the thermostat the heater and pump are switched off. This arrangement has an added advantage in that if the airstone is placed alongside the heater, excellent circulation of the warmed water is ensured.

Figure 1 illustrates the electrical circuits involved. For normal operation switch 1 is ON and switch 2 is OFF. The direction of flow of electric current is illustrated in figure 2.

It is useful to include a means of operating the pump continuously and independently of the thermostat as and when required. The operation of this

"thermostat by-pass" circuit is shown in figure 3. It can be seen from the diagram that when switch 1 is OFF and switch 2 is ON the thermostat will still control the operation of the heater but the pump has a separate circuit enabling it to operate independently.

It should be noted, however, that if both switches 1 and 2 are left ON the heater would operate continuously with unfortunate results!

Normally aquarists quite quickly, on setting up a tank, determine the most suitable light intensity and duration to enable the plants to grow well yet prevent excessive algal growth. It only then remains to remember to switch on the lights for this period in order to maintain these conditions.

To remove this problem one can include a timing clock in the electric circuit of the tank. This can be set to provide a selected period of illumination every day and at any particular time of day (for example in the evening). It is also, of course, particularly useful during holiday periods to prevent plants growing long and thin with the lack of light.

If such a clock is included one might as well use the timed period to automatically control the pump for a suitable period each day (figure 4).

Since for a large proportion of tanks a period of illumination of, say, 8-15 hours is most suitable, by connecting the pump to the clock controlling the lights the tank will also be aerated and filtered for a similar period each day. For many tanks this period is quite reasonable and in addition the visually attractive aeration occurs at a time when the tank is being illuminated and likely to be looked at.

If this type of lighting control is incorporated into the circuit the heating of the tank must of course be provided by a separate thermostatically controlled heater (figure 5).

While this method of regulating pump operation is useful it may well lead to a high temperature layer developing near the surface of the water during the dark period when the aeration system is not operating. This can be overcome if desired by either having *two* pumps in operation and using *both* systems described or possibly by combining the two systems so that a *single* pump is operated by the thermostat *and* the lighting control clock.

It is perhaps worthwhile to make a few last remarks concerning the safety aspects of wiring a fish tank. Generally speaking water and electricity make a

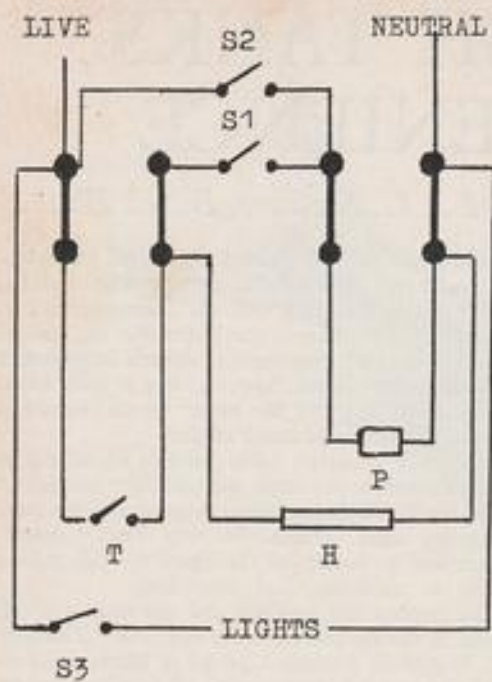


Figure 1

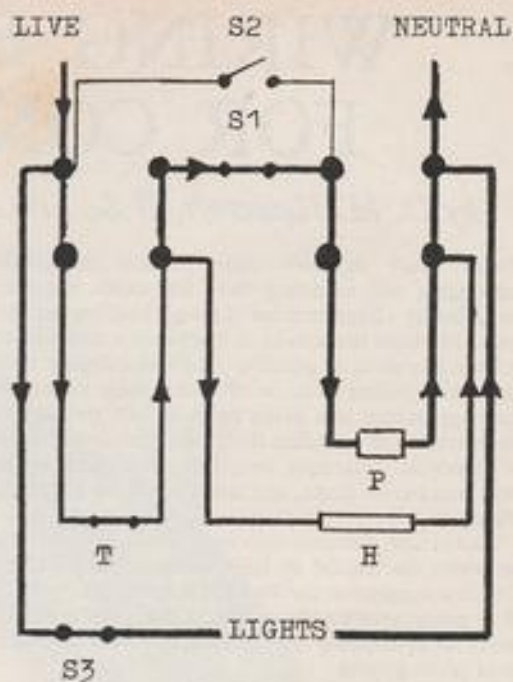


Figure 2

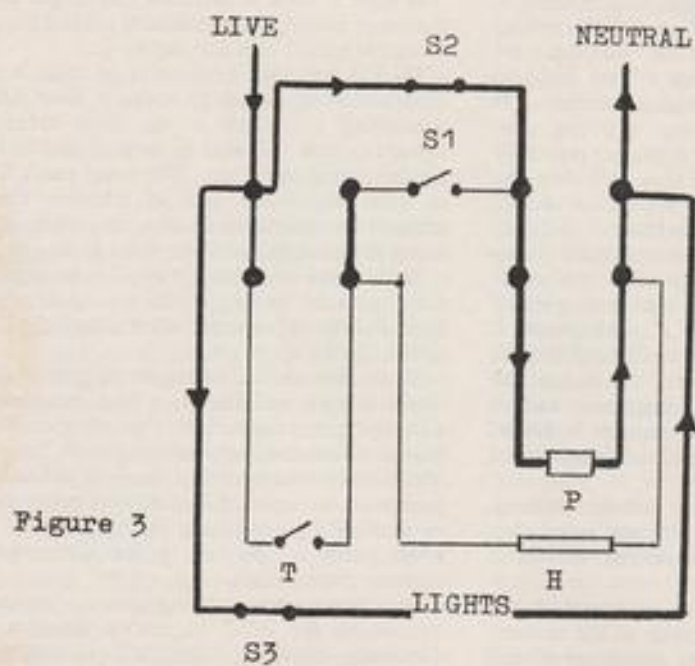


Figure 3

dangerous combination and care should be taken to prevent overloading of circuits and excessive condensation on the wiring. For the majority of pumps and heaters in operation in domestic aquaria the circuits carry relatively little current and single-strand plastic-coated wire and plastic wire connectors are sufficient. It is essential, however, that as far as possible all wiring should be above the water level to

prevent condensation water running down the wires to sockets and connectors. In addition all connectors should be fully covered with adhesive tape, preferably of the waterproof kind, to try to prevent the entry of condensation water with the consequent possibility of short circuits, failure of the heating system and perhaps serious shocks to the fish-keeper from the wires and tank frame.

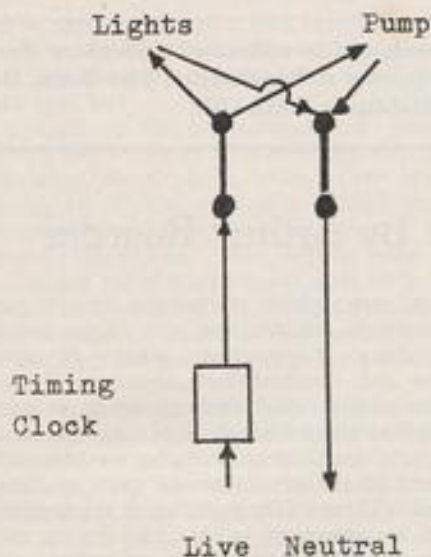


Figure 4

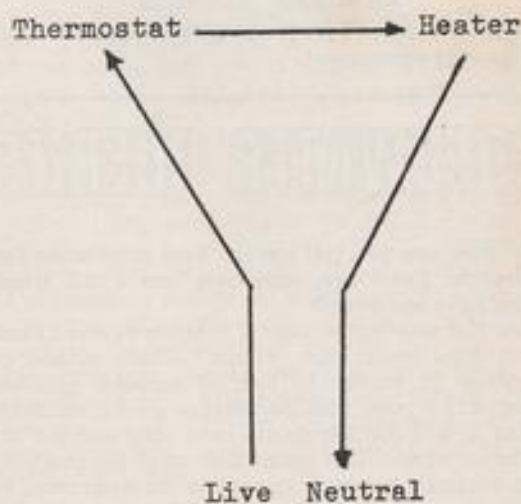


Figure 5

Key

- plastic electrical connectors
- T thermostat
- H heater
- P pump
- S1 } switches
- S2 }
- S3 }



OUR EXPERTS' ANSWERS TO YOUR QUERIES

READERS' SERVICE

All queries **MUST** be accompanied by a stamped addressed envelope.

Letters should be addressed to Readers' Service, The Aquarist & Pondkeeper, The Butts, Brentford, Middlesex, TW8 8BN

COLDWATER QUERIES

by Arthur Boarder

Please can you tell me the best conditions for breeding Koi Carp, and how can I tell when they have spawned?

As Koi grow rather large it is better to breed them in a pond rather than a tank. Their method of breeding is similar to that of ordinary goldfish. Therefore a pond with the water in good condition is essential and the fish should have been well fed the autumn before. It is certain that, of all the requisites for successful breeding, one is that the water must be well oxygenated. One can hardly expect the fish to spawn unless the water is pure and lacks foul gases. Naturally one must have the two sexes and the males will generally show the white raised tubercles on the gill plates and, or, on the front of the pectoral fins.

A healthy fish of about three years of age should be able to breed, but it is likely that larger or older fish would be more certain to do so. As with many other types of fishes, the Koi would eat their eggs or fry, if any hatch. Therefore it is necessary to take precautions so that as many eggs as possible are saved. In a fairly large pond it will be difficult to save many eggs unless certain precautions are taken. If the pond does not contain a large amount of underwater plants, it is possible to control the positions of the spawnings. The fish prefer to spawn in as shallow water as possible and on water plants which are at or very near the surface. If the pond is heavily planted it is certain that spawnings can take place all over it and so many of the eggs will be lost. If the pond is kept fairly free from oxygenating plants, the saving of the eggs will present no difficulties. Water lily leaves on the surface are quite in order, as they will tend to shade out much of the light and so prevent the formation of too much free-floating algae. Bunches of water plants can be anchored near the side of the pond and in the shallowest part, if one exists.

Several water plants are suitable for this purpose and among the suitable ones are: *Elodea canadensis*; *Egeria densa*; *Lagarosiphon major*; *Myriophyllum spicatum* and *Ceratophyllum demersum*. I use the last-mentioned for the fish to spawn on as it has no roots and so when a bunch of it, with eggs, is transferred to a tank, there need be no base compost there and so the possibilities of pests or diseases is lessened. There will be no difficulty in knowing when the fish are spawning, as the chase by the males is quite hectic and the females are pushed through the densest part of the water plants to encourage the laying of eggs. They are fertilised by the males as they are laid and stick to the water plants as single, bead-like bits of jelly.

Once a number of eggs are seen, it is advisable to remove them, with the plants, to the hatching tank. A fresh bunch of plants can then be introduced. If the hatching tank can have the temperature of the water raised to about 70°F, it will hasten the hatching of the eggs. This can be an advantage as there must always be the chance that certain pests are on the plants taken from the pond. A quick hatch will ensure that the eggs stand less chance of being destroyed. Once the fry hatch, the usual methods for rearing goldfish will apply as these fish feed on exactly the same foods as do goldfish.

I have several goldfish and shubunkins in a stone sink sunk in the ground. I have used a special algae killer to clear the water and now there is a quantity of green scum on the surface of the water. Why is this?

It is possible that the scum is nothing but the dead algae which has floated to the surface. This could be flushed off with a hose and it is probable that after a time the scum will disappear.

In an outside small pond, what exotic fishes could I have with goldfish?

Provided the pond is large enough to house more fishes you could add some American Sun Bass and or some Bitterling. The Sun Bass would have to be taken indoors out of the frost for the winter, as although they can stand a certain amount of cold, it is not advisable to keep them at or below 50°F.

I have three, two and a half inch goldfish in a 15½ × 8½ × 6½ inch tank. Recently I introduced a small golden orfe but it died in a few days. Why should this be?

Your tank should not accommodate more than five and a half inches of fish, even then only if there are growing water plants there. Orfe are quite unsuitable for such a small tank as they are a fast swimming fish and can grow quite quickly if given the correct conditions. They require more oxygen than ordinary goldfish and would soon be in trouble in a small tank with goldfish. I do not consider that orfe are suitable for an indoor tank, unless it is about three feet long and the water is in good condition.

I have a garden pond, three feet by two feet and ten inches deep. In it I have five goldfish of about three inches long and two three inch shubunkins. Do you think I have any chance of breeding from them when they are large enough?

Your chances of breeding in your pond are very remote. The pond is very small and in fact is not much larger than a fair sized tank. You might be lucky with either the shubunkins or three of the goldfish, providing you have both sexes present. If you leave the two types together and they do spawn, the result would possibly produce many useless cross-breeds. Even with the suggestion above you would have to take the eggs away from the parent fish, as in such a small area of water it is almost certain that the eggs would be eaten.

One of my goldfish in a tank has white marks on the pectoral fins. I do not think it is white spot disease as the spots seem to be too large for this. I cannot seem to cure the trouble and would like advice?

If the marks are what I suspect, then you cannot cure them, as this is not a disease but a natural happening. It is probable that the fish in question is a male fish and when in breeding condition, many male goldfish show these raised spots on the pectoral fins as well as on the gill plates.

I have a catfish with my goldfish in a tank. Any white worms I give are eaten by the goldfish before the catfish can get any. It seems to hide away most of the day and only moves about to feed at nights. What can I feed it on?

Catfish will eat anything a goldfish will eat and even another goldfish if it is small enough. You say your catfish gets on all right with the goldfish, but perhaps this will not be so when the catfish grows. To feed the catfish, why not drop some food in at night when it will be able to find it before the goldfish?

I have a six gallon tank with an areator but have lost three lots of goldfish. They lie on the bottom soon after being introduced and later die. I thought it might be the 'Magic' fly killer in the room, but this is impossible as the air supply for the tank comes from outside. Why do the fish die?

There are two reasons I can think of as to why the fish die. One is that your water for the tank comes through copper pipes or that the fly-killer is to blame. Copper is very dangerous to fish and if your water from the mains is soft and comes through copper pipe the water could be the killer. Water containing lime is not quite as bad as the pipes soon get encrusted with lime and so the copper does not get into the water as easily. Although the air for your tank may come from outside, the air in the room can be impregnated with the poison from the fly-killer. This may be D.D.T. or a similar chemical, and the water in the tank could easily become fouled by this and so kill the fish.

I am troubled with blanket weed in my two ponds. My wife heard on the wireless that the Swan mussel will eat this weed. Is this so and would the mussel harm the goldfish?

The Swan mussel (*Anodonta cygnea*) cannot eat the blanket weed. It has no teeth and only feeds on minute organisms. It has two tubes, one which inhales water and the other exhales it. Whilst this goes on any tiny creatures or plant life is sifted out. Free-floating green algae is eaten and also infusoria. The mussels would not harm goldfish but their larvae must attach themselves to a fish in order to develop, and so these could harm a fish. Also if there was insufficient mulm or mud at the bottom the mussels could not move about and would soon die and pollute the water.

I have lost several goldfish from my pond. They hang around on the surface breathing heavily. Why is this?

When goldfish mouth at the surface continually, it is because the water is impure and does not contain enough oxygen. The water should be changed or at least a large proportion of it. Unless this is done the fish will soon die, and show no signs of injury or disease.

Can you please tell me where I can get some 'worm shredders,' and if not could you describe them so that I may be able to make them?

The worm shredders were made and sold by the late Mr. Walker, of Christchurch, Hants., and who previously lived at Nottingham, I believe. I think that they would be difficult to make, and would require a special lathe. I have three types, one pair consists of two flat stainless steel plates, one $2\frac{1}{2} \times 2\frac{1}{2}$ inches and the other 3×2 inches. These plates have a number of circles inscribed in them from the centre and increasing in size to the outside. One has a handle. Another pair I have are coarser in their depth of circles and are $3 \times 1\frac{1}{2}$ inches. These have the circles near one end so that the plain end can be held. Another pair have one large plate, 5×5 inches and a smaller one, 3×3 inches. If any reputable firm was able to make and sell these I would be pleased to loan a pair as a copy. However, I do not know if they were patented. For mashing up worms or other foods the matter is placed between the plates which are then rubbed to reduce the contents to a very fine state.

I have a fantail which is quite all right until I feed it. Then it rolls over and cannot keep its balance. I have tried the warm water treatment, but to no avail. What shall I do?

Do not feed the fantail for a month. It will not starve during that time, especially if there are some water plants in the tank. After the fast, try giving broken garden worms for a time and then only give the smallest amount of food at each feed. The fish will probably get right again after this.

I have a $36 \times 18 \times 18$ in. tank and would like to know how many fish I can keep in it and must I have an aerator and a filter? I want to have fancy goldfish and would like to know at what temperature to keep the water?

The tank will hold about 27 inches of fish, leaving out the tail. If you do not exceed this stocking, there is no need to use either a filter or aerator. These

are, in my opinion, only necessary if one over-stocks the tank. A tank can be kept in good order for very many years as long as it receives the usual weekly servicing. Most fancy goldfish are bred and reared at a warmer temperature than is usual for goldfish. About 65°F is a very suitable temperature, and although some varieties will enjoy one or ten degrees higher, it may then be necessary to use aeration as the warmer water will hold less oxygen.

What is the best plant to use as a cover for the back of a coldwater tank and to hide the back frame?

I think that the best plant for your purpose is *Lagarosiphon major* which used to be sold under the name of *Elodea crista*. This plant soon grows well in a furnished tank and will send out shoots a foot long in a matter of a couple of weeks. If they are pruned back occasionally the bases get nice and thick. When pruning them, do not cut many stems at once but thin out so that the main cover is not lost. The time to prune is when the stems reach the surface and cover too much of it.

I am enclosing a sample of slate. Is this safe to use in a set-up tank please?

The slate is safe for a tank and with slabs of this it is possible to create shelves which can look quite attractive. The base compost should match to a certain extent or the tank will not look right. However, the piece you sent had an edge as sharp as a razor. Make sure that all such edges are rubbed down or the fish could be injured when rubbing against such edges.

Can you please tell me what the enclosed plant is, as I ordered *Elodea densa*, but do not think this is what was sent?

The plant you sent is certainly not *Elodea densa* but *Elodea canadensis*. The plant you ordered has fairly long leaves, about three times as long as the plant you received. You should complain to the dealer who sent this plant. By the way the plant you require has been renamed *Egeria densa*.

TROPICAL QUERIES

by Jack Hems

I have just set up a 24 in. by 15 in. by 12 in. tank with well-washed compost, two dozen mixed plants, and adequate lighting and heating apparatus. Please will you tell me how many fishes this aquarium will accommodate without the aid of an air pump or filter? Furthermore, I should like to know the names of a few fishes ideally suited to my tank.

Your tank will house about seventeen small ($1\frac{1}{2}$ -2 in.) fishes. Among the best species for colour and a friendly atmosphere are the tetras, popularly known as neon, black neon, platinum, pretty, lemon and flag. Cyprinids such as the harlequin fish, the checker barb and the cherry barb are recommended too. Useful and attractive in appearance are the small catfish belonging to the genus *Corydoras*.

On holiday in Scotland, I collected a number of rocks with fine markings. How can I make certain that these rocks will not charge the water with harmful substances if I introduce them into my aquarium?

Plunge the rocks under water for a few seconds and then, while still wet, sprinkle them with neat hydrochloric or sulphuric acid. If the rocks contain lime they will fizz or froth. Apart from being lime-free, rocks for the aquarium should be about as hard as glass, that is to say, they should not throw off grains of dust when scratched with the point of a bodkin.

I have a 48 in. by 15 in. by 12 in. tank. I would appreciate your comments on the advisability of placing nishiki koi, black moors and silver sharks in this tank.

The silver shark (*Balantiocheilus melanopterus*) is native to tropical Asia and thus needs constant warmth. The black moor and koi carp are exotic coldwater fishes that flourish best at a temperature in the middle to upper fifties to low sixties (°F), though the koi is hardy enough to winter, well-down from a roof of ice, outdoors. I suggest that you buy or borrow a few reliable books on fishkeeping such as Professor Gunther Sterba's *Freshwater Fishes of the World*, *All About Tropical Fish* by D. McInerney, or *Tropical Freshwater Aquaria* by G. Cust and P. Bird. *The Goldfish* by G. F. Hervey and J. Hems will give you all the information you may wish to know about common and fancy varieties of goldfish.

What can you tell me about a cichlid called *Geophagus acuticeps*?

This species hails from Brazil and attains a length of about 6 to 8 in. in the aquarium. As its generic name suggests, it is a bottom digger and, like its congener, almost peaceful, at least in a spacious aquarium occupied with fishes of about its own build and size. It is more attractively marked than *G. jurupari*, with shiny areas of green to gold, and the ventral fins are drawn out to fine points. It will eat almost anything.

I asked a dealer in tropical fishes whether it would be safe to include corals and shells in my decorative aquarium and his answer was in the affirmative. Yet in a book I read the other day, the author stated that corals and shells should not be placed in the freshwater aquarium. I should appreciate your views on this subject.

To introduce shells and corals into a freshwater aquarium is to ask for trouble. Not only will such calcareous objects lead to hardening of the water, but the pH will rise high on the side of alkalinity within the space of four or five months. And in the main tropical fishes do not live very happy lives in water that is hard and alkaline.

Please can you help me with some information on the species called *Roloffia bertholdi*? I cannot find this species mentioned in even the more expensive reference books.

Roloffia bertholdi is sometimes known as *Aphyosemion bertholdi*. It is from West Africa and is not very demanding. In fact, all it asks for is a small tank, with peat on the bottom, a thick hummock of nitella or Java moss to hide in, and soft water giving an acid reaction. It will accept the usual small live foods.

Please tell me the home range of the guppy?

The short-finned wild guppy is native to the northern and north-eastern areas of South America and some of the islands of the West Indies. But early in its history, that is as a recorded species, its larvicidal qualities were soon put to the service of man, and countless numbers of guppies were shipped to many parts of the world to help keep down the malaria-carrying mosquito. So today it may be found swimming in lakes in tropical Asia, climatically favoured parts of southern Europe, and the marshlands of Africa.

What is the best set-up and food for the tyre track eel?

The spiny eel, popularly called the tyre track eel or *Mastacembelus armatus*, likes a thick growth of plants over about 3 in. of soft sand. The temperature should average about 75°F (24°C). Fishes of the family *Mastacembelidae* will seldom accept anything but tiny worms, live *Daphnia* or fish fry. *M. armatus* attains a length of about 2 ft. in the wild state, but only about half this size in captivity.

I have been told that a number of our tropical aquarium fishes are more often seen on the dinner plate than in an aquarium in Asian countries. Is this true?

Quite true of some of the larger species such as *Tilapia*, *Osphronemus*, *Barbus* and *Channa*. In point of fact, the above fishes are being farmed in natural or man-made lakes to help keep certain peoples above starvation level.

Will *Sorubim lima* settle down in a thickly planted community tank?

I hasten to warn you that *S. lima* is not suited to a community tank. As it increases in size it will increasingly seek out smaller fishes for food.

What is the best kind of water for keeping and breeding *Mesogobius chaetodon*?

As this lovely little sunfish is native to the cedar swamps of New Jersey and Delaware, then it seems likely that a clear, brownish acid water is the best. The temperature of the water should range from about the middle fifties (°F) from about November to March, with a gradual rise to 72 to 75°F (22-24°C) from early spring to mid-autumn.

DISCUS

A SUMMARY OF NOTES FOR THE BEGINNER

by R. H. Cooke

Introduction

Hobbyists who may have recently been introduced to these beautiful aquarium fish may have come to the conclusion that they are *difficult* to keep. This is not so. Discus fish are *different* to keep.

Much of the misunderstanding stems from the fact that many experienced aquarists attempt to keep and breed Discus in a similar manner to many other common varieties of tropical fish. If the reader of this follows the general good aquarium practices detailed, success in keeping and spawning Discus fish will not only be possible, but can be guaranteed.

Discus fish do prefer to live by themselves. However, they can be kept in community environment provided the conditions are made most favourable for them.

These fish will give the owner plenty of warning if sickness is imminent, and providing the symptoms are recognised by the owner and acted upon, he or she will find that they are as easy to keep as many other tropicals.

The Discus Tank

The Discus tank can be any standard type of tank which has been recognised by aquarists as acceptable to tropical aquarium fish of similar size. However, it would be better if it were silicone rubber sealed to prevent harbouring bugs in the putty cracks. The frame, plastic-coated, will prevent corrosion or corrosive pollution.

A tank 3 ft. long, 17 in. high and 15 in. front to rear is the minimum size to support one pair (male and female) of adult fishes, 5 half grown Discus or 12 small Discus. But remember, your Discus will grow rapidly and will require the minimum space so described. A Discus no larger than a 10p piece will be the size of a small saucer in 18 months.

Be prepared for this alarming growth.

Smaller tanks can be used as temporary accommodation for small fish.

The Discus Water

The water for your Discus is as important as the fish, always keep it sparkling clean by siphoning off uneaten food and fish waste each day. Never neglect this daily chore. After siphoning away the waste, top the tank up again with aerated water of similar quality and temperature.

The beginner is advised to bring a sample of his tap-water to a Discus expert, who will advise him of its suitability, and how best to mix it with pure water. Beware of some experts, they are not always what they pretend to be. An expert is a person who keeps, breeds or specialises, which is not necessarily a salesman behind a counter.

Do not make your water over-soft or over-hard. In some areas water can be used from the Municipal supply after aeration. It is not as rare as you may imagine.

Always allow a new tank of water to stand heated to temperature for 24 hours before introducing the fish. This does not necessarily apply to topping up water which may be used after a few hours of aeration.

Suitable Water Can Be:

Tap water from certain areas.

Tap water mixed with demineralised water.

Rain water from areas well away from industry (after filtering).

Distilled water mixed with tap water.

Seek advice from your *Discus* experts, ask him to tell you the proportions to use. Do not experiment with water until you have some experience.

Unsuitable Water:

Very soft water such as that obtained straight from demineralisers.

Very acid water.

Very alkaline water.

River or pond water unless previously boiled, and measured for pH and hardness.

Very hard water such as that in the London area and Ipswich area.

Do not collect and use rain water from the roofs of buildings.

Do not worry about the pH of your water if it is between 6.4 and 7.2.

Nearly pure water, well aerated, will take up the acidifying gases from the air, it will also take up paint fumes and cigarette smoke, insect-spray chemicals and gas from leaky domestic appliances. Watch out for these air polluters.

To maintain the health of your Discus, change about 3 per cent of the tank water each day or about 25 per cent per week. Little and often is generally the best policy.

Discus spawning



Water from some types of demineralisers is sometimes unsuitable even when mixed with tap water.

It is also unwise to use water from water-softening plants. If in doubt mix equal quantities of demineralised water with tap water.

Introduce your new fish to your tank slowly. Float the plastic bag containing the fish in their new home and add water from your tank into the bag until it contains twice as much water as when you started. This should take at least two hours. Do not worry if the fish lie on their sides during this time. Then, gently allow the fish to swim out into your tank.

Discus Temperature

Keep your Discus at temperatures between 84°F and 87°F. Never allow it to fall below 80°F or rise above 90°F except for special purposes.

Remember that room draughts, cold aerator air flow, central heating, open windows and doors may produce hot or cold areas in the tank which may displease or sicken the fish.

Discus Light

Discus, in their natural habitat, experience about equal proportions of daylight and darkness. Re-

member, however, that nature's darkness is not a complete blackout. Daylight and Grolux lighting will show off their best colours. Switch the light on in the evening before it gets dark to prevent shock to the fish. Try not to exceed 15 hours in winter and 19 hours during the summer of integrated artificial light and daylight.

Discus Filters

A filter is necessary for helping to keep the water clean and free from suspended particles. Use either a good airlift filter or a power filter. These should be well filled with synthetic wool as obtainable from nearly all fish dealers and pet shops. No other medium should or need be used until you learn more about your fish and their preferences and dislikes. Clean your filter and replace the synthetic wool every 3 to 4 weeks without fail. Clean also the tubes which carry the water to and from the tank.

The Discus Thermostat

Use a good outside thermostat with adequate current-carrying capacity in relation to the heaters within your tank.

The Discus Heaters

A 30 gallon aquarium requires at least a 200 watt heater. To prevent burning the fish, as they may rest against them at night, use two 100 watt heaters in parallel, in preference to one 200 watt heater. For a 50 gallon aquarium use three 100 watt heaters in parallel.

The Discus Diet

Nearly all Discus will happily eat white worm. They should also be coaxed into eating shredded ox heart, which they will greedily take after becoming accustomed to this food. Some non-fat chicken breast, also frozen and shredded, is often accepted, as is part cooked spinach or freeze-dried foods.

Try not to use *tubifex* worms which are sewage worms and often smell like it. They can carry parasites as can any waterborne live food. However, *tubifex* is probably the most dangerous.

Remember that large Discus prefer food particles larger than small Discus can swallow. They will probably leave very small particles to rot and pollute the tank. I wish to repeat, scraps of uneaten food must be removed from the tank daily.

Feed your fish at least once per day or at any time they are hungry. Little and often is again the best rule.

If you buy very small Discus, you may have to chop the white worm for them to make it sufficiently small for their tiny throats.

Discus Plants

To provide cover for frightened or harassed fish,

you will have to use plastic plants in your Discus tanks as the tank should not contain any form of gravel. Anchor them down with rubber suckers or small pieces of drilled slate.

Never put anything in the tank that can harbour waste or liberate poison into the water. Most plastics are harmless, but beware of some of the brittle kinds or those, which, when heated, give off a strong odour. Consult a plastics expert or industrial chemist for guidance, if uncertain.

Discus, the Bully

You will probably find that one of your Discus bullies the others. For this reason until they form compatible pairs, it is better to keep as many fish as are commensurate with freedom for growth. If you have only two fish in your tank and one of those is a bully, the life of the other will be a misery.

A large collection of plants will sometimes help to give refuge, but you must never overstock your tank with fish.

Discus Diseases

Discus that start to sicken generally go dark and hide. If you follow the rules it is unlikely that you will have trouble. However, there is always the chance of buying a sick fish since all fish may carry bugs which may show themselves at a later date, if the fish are not kept healthy. Never neglect them and remember that most dealers who import Discus understand them. Seek their help immediately. Prolonged treatment at a temperature of 95°F will often provide a cure. Very few fish die from disease if nursed correctly. The Discus is a very tough fish and will repay your care with years of pleasure.

Discus the Fish

This gorgeous, friendly fish is, in my opinion, without equal. He has an inquiring character which causes him to appear as interested in you as you are in him. He's not shy, just cautious. When subdued by one of his own kind he will show his dark vertical bars and hide from his pursuer. In health, his appetite is almost without satisfaction. He will sulk if you move him to quarters which do not suit his taste and stop eating just to prove to you that he is the boss. He will fight to protect himself and his mate, and, in courtship, will claim with her an area of the tank where no other dare venture.

He will often eat his eggs or the hatched wrigglers and when you have given up hope or become demented, he will present you with a brood of young fish. However, notwithstanding his moods he will never fail to capture your interest and devotion, even the dazzling marines will never equal his splendid array of colours when preparing to spawn. He is, without doubt, the unchallenged King of the Aquaria.

WHAT IS YOUR OPINION?

by B. Whiteside

Photographs by the Author



I HAVE JUST returned from a week's holiday in London, and now face the not over-pleasant prospect of a new school term. As usual, I did not return empty-handed, but went through the peculiar ritual of trying to eat dinner in the cramped confines of an aircraft seat, while paying strict attention to the briefcase at my feet which contained two young, brown Discus. The Discus cost me £1.75 each, and I bought them at a large London establishment which I always enjoy visiting when I'm in London. The polythene bag in which the fish were packed was topped up with oxygen, and the fish survived their flight home in good condition. I hope that they'll be company for the larger, single Discus which remains from a previous London trip. I'll let you know how they get along.

On my return home, your usual pile of letters awaited me. I was pleased to receive one from 14-year-old Bernad Walmer, of 17 Mount Pleasant Square, Rathmines, Dublin 6, Ireland, as this is the first letter for the column which has come from a reader in Eire. Bernad has been keeping fishes for the past four years, and he has several 24in. all-glass tanks; he wonders if any readers have made 4ft.-5ft. all-glass tanks using silicone rubber sealant. He is very keen to keep such fishes as the butterfly, the leaf fish, the archer and the mudskipper, and wonders if any readers could sell him some, and supply him with information about breeding them, as he says that it is impossible for him to obtain them in Ireland. He has already bred the coolie loach and, in answer to my queries in the June edition, says that he has kept and bred "Rams" for fourteen months. The fish are kept in a 24in. x 15in. x 15in. tank, and are removed to a 12in. x 8in. x 8in. tank for breeding. His fish soon make a hole in the sand, and lay upwards of 20 eggs; they are very attentive parents and quickly remove any eggs which are attacked by fungus. The fish are fed on white worms and dried food. Bernad has also bred Congo Cichlids and goldfish in an 18in. x 10in. x 10in. tank. (Please let Bernad know if you can supply him with any of the fishes which he wants.)

The next letter is also a "first timer", and it comes from Mr. A. Azzopandi, whose address is 6 Steps Street, St. Paul's Bay, Malta. He has used "Felix" cat food to feed his fishes for the past two years, with great success. He finds that young fishes thrive on

it, and about six months ago he bought two clown loaches which would not feed for him. After fifteen days one fish died, so he gave the other fish the cat food; it began to nibble at it as soon as it reached the bottom, so Mr. Azzopandi bought another three loaches, and all four are now doing very well on only "Felix" cat food. His fishes are fed three times per day, and all the occupants of the community tanks are very active and free from any disease.

I was recently given a present of two very interesting—but I consider quite ugly—fish: a pair of climbing perches. They are most peculiar fish, and as they make occasional mad dashes to the water surface, I have to make sure that their tank has a close-fitting cover glass. It would be interesting to take them out of the water for a short period, to see how they behave on dry land, but as yet I have not had the courage to do so. They did not seem to be too interested in food until yesterday, when I dropped a small cube of raw steak into their tank. They went absolutely wild, and were devouring it with obvious relish within seconds—literally. I would be pleased to hear of readers experiences with these fish.

Mr. M. Harris, who lives at Tolworth, Surrey considers this to be the best "fishy magazine" available.

He agrees with a former suggestion, by Mr. Bartlett-Love, that a "Which?" type evaluation of fish foods should be carried out. He thinks that it would be very useful, especially to novices. He considers that TetraMin would top the list, as he has found from experience that his fishes grow best on it. Mr. Harris ends his letter by saying: "I would like to heartily recommend the plants supplied by Mr. D. Smith, of Kidderminster. He runs a really good service. Thank you Mr. Smith!" Mr. Harris would also like to see "The Aquarist" appear each fortnight.

Nigel Evans is 15 years old, and his address is 57 Gaer Park Lane, Newport, Mon. He has been keeping fishes for about four years with reasonable success, but the growing of plants is his weak point. He has only about six unhealthy plants to show from his four years in the hobby. (If you care to send me details of the conditions under which your plants will not grow, Nigel, I'll try to suggest one or two points which might help them improve. Possibly you're trying to grow the wrong species of plants in a given set of conditions.) Nigel was given a pair of leopard

there is beauty in both freshwater fishes and marines; he says that it's a bit like art—some people like the old masters, while others like modern art. He suggests that one compares a Royal Tang with a "Ram" to see just how beautiful each is in its own right. Mr. Piggins ends by saying that a well set up tank—whether it's marine, freshwater tropical, or coldwater—will convey its beauty to anyone interested in fishes.

Miss A. E. Young's home is at 25 Shipley Road, Brighton, BN2 6TA, and the main subject about which she writes is *Pelmatochromis kribensis* (photograph 2 shows one of my female fish). In February of this year Miss Young acquired her first tropical tank; her second was set up in March. In May she decided to try to breed *P. kribensis*, so she made a partition in her 24in. x 12in. x 12in. plastic tank using a piece of I.C.I. plastic of approximately 12in. x 12in. x 1/2in. In this partition she placed a scrubbed, broken

and is planted with Elodea. Miss Young says that she does not have much time or tank space to devote to the hobby, but she is highly pleased with her results so far and hopes to branch out when more time and space are available.

Mr. H. Clark, who lives at 8 Kearsney Avenue, North End, Portsmouth, Hants., says that he is "only a new boy" to the hobby, and has only purchased his first copy of "The Aquarist", but he feels that he "must have a say" in this feature. He feels that Mr. M. J. Anns (August edition) "would appear to have very narrow-minded reasons for taking the magazine for 10 years." He goes on to say: "I wonder if he conscientiously reads all the pages of advertisements? What he should realize is that a hobby or interest is only furthered by all interested parties being catered for and communicated with. Only competition can make the hobby flourish, and quality



flower pot, and introduced a pair of *kribensis*. The male was attacked by the female, so he was placed on the other side of the partition; soon the pair became very interested in each other, so the male was placed in with the female again. A pit was soon dug beneath the flower pot, and on 28th May, Miss Young noticed some movement under the flower pot. The fry had just hatched! Unfortunately, the next day she had to be away from home for 36 hours, so the parent fish were given a good feed of *Daphnia*, and a few drops of fry food were added to the tank. Hoping that the parents would think it was night, Miss Young switched off the lights and left.

On her return she found that all was well, and about 40 fry were counted. She now has a shoal of thirteen beautiful, young fry in her top community tank, and the remaining twenty five are growing well in the lower nursery tank. The parents carefully cared for their young. The top tank is well aerated and filtered, is kept at a constant temperature of 78°F,

of stock can only be proven by comparison. If only one person per club reads the club news, and collects one piece of information about a fellow club member—perhaps in a different area—those eight pages will have been read with interest by a large number of interested parties." Mr. Clark continues: "Mr. Anns should have seen in his ten years that which I find in my first copy—that your magazine caters for a large cross-section of the hobby, and your own article is a reflection of this too." He goes on to say that the reason why he bought a copy of "The Aquarist" was in the hope of finding out something about pumps and filters suitable for his medium sized garden pond, but he says that he can find nothing to enlighten him. Mr. Clark says that there are books which mention such items as he may require, but that the books assume that the reader already knows "what's what".

In a recent edition of the magazine I asked for comments on the breeding of the glowlight. Mr. W. Rutherford, whose letter comes from 115 Holywell

catfish one year ago, and was told that the fish were eleven years old. The fish are still growing strongly, and should now be twelve years old if his information is correct. Nigel was also given a pair of *Rivulus urophthalmus*, which he finds are most interesting. He wonders if this is a rare fish. (Sterba says that they are "great favourites", in his standard work.) When going on holiday, Nigel switches off everything in his tank—including heaters—and the person next door feeds them once per day on flaked food. On his return, Nigel finds his fishes as he left them. (I'm afraid that I wouldn't risk switching off the heater where I live!) He does not agree with the idea of "The Aquarist" appearing each fortnight as he is still at school and considers that many others, like himself, find 20p per month quite enough to spend on a magazine.

problem with "Rams" is that they require soft water. A dealer friend of his obtained a dozen fine specimens which he placed in a show tank; after only a day their fins split and eventually disintegrated. The hard water in the tank was replaced with soft water, and the fish made a speedy recovery, their fins growing perfectly again. Unlike Mr. Burtles, Mr. Jones finds Oscars difficult to keep; he has not yet managed to keep one alive for more than three weeks.

Mr. Jones thinks the colours of marine fishes to be "extraordinarily beautiful", mainly because they are so clear and well defined. He says that the colours of Pacific dwellers are usually in large, clearly defined patches which do not blend together like those of freshwater fishes. Mr. Jones feels that marine fishes are most attractive when looked at from a distance,



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and admired for their brightness and simplicity, while freshwater tropical fishes have to be studied closely to realize their subtle and less extravagant colours. He finds the colours of coldwater, freshwater fishes to be just as magnificent as those of tropical marines. (I would certainly like to see some of the beautifully coloured Koi which I have only seen in photographs so far.)

Mr. R. Piggins, of 57 St. George's Road, Enfield, Middlesex, has also got some observations to make on "Rams". He had one pair for nine months, and then added a new pair. The new ones died after only seven days. Both Mr. Piggins' local dealers told him that they are very delicate fish, and one of the dealers said that he would probably not stock any more "Rams" as he lost money on nearly every shipment. Mr. Piggins suggests that they would probably do well with Discus. (I've tried keeping both in the same aquarium, but still the "Rams" did not survive for more than a few weeks!) Mr. Piggins thinks that

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Mr. R. Piggins, of 57 St. George's Road, Enfield, Middlesex, has also got some observations to make on "Rams". He had one pair for nine months, and then added a new pair. The new ones died after only seven days. Both Mr. Piggins' local dealers told him that they are very delicate fish, and one of the dealers said that he would probably not stock any more "Rams" as he lost money on nearly every shipment. Mr. Piggins suggests that they would probably do well with Discus. (I've tried keeping both in the same aquarium, but still the "Rams" did not survive for more than a few weeks!) Mr. Piggins thinks that

Drive, Loughborough, Leics., has had great success in the breeding and rearing of glowlights. Mr. Rutherford recommends a tank of 14in. x 8in. x 8in., or less, for breeding, to ensure that a large percentage of eggs is fertilized. The tank should be cleaned, and half filled with fresh tap water—hardness not being very important. Several bunches of fine leaved plants should be added. The next step is to boil a small amount of oak or ash bark in a gallon of water for fifteen minutes. The resulting liquid is allowed to cool, and enough is then added to the tank to produce a dark amber coloured water. The temperature should then be raised to 78-80°F, and the tank covered to prevent light entering. A well-conditioned pair of fish should then be added. Next morning the cover should be removed from the front glass of the tank. The fish should begin their courtship later that morning, or in the afternoon. They should eventually "lock" together, head to head, and perform a complete barrel roll—ending with a flick as about a dozen eggs are laid. When the whole spawning is completed, the parents should be removed. The tank should then be left for 48 hours with no artificial light as this tends to reduce hatching. Once hatched, the fry can be raised as other fry are. (A most useful account, Mr. Rutherford!)

35 The Chilterns, Kensworth, Dunstable, Beds., LU6 3RJ, heads the letter from Mr. M. B. Rowland, and his subject is marines. Two marines which he would recommend for the beginner are the electric blue Damsel and the pretty Damsel. He has both of these fish in a 15 gallon tank, and they eat flaked food, Mysus shrimps and bloodworms. The tank is 24in. long, and is lighted by an 18in. Gro-Lux tube for about twelve hours per day; it is situated very near a window which faces west. The tank has a very good growth of green and brown algae. Mr. Rowland wonders why Mr. R. McGilvray (September issue) tops up his marine tank with distilled water. "What's wrong with tap water?" he asks. Mr. Rowland ends his letter by posing two marine problems for discussion in a future "Aquarist". They are: (1) Although it is recommended that one should have at least a 20 gallon marine tank, what is your smallest set up? (2) What sort of success have you had with marine plants, and under what conditions did they grow or not grow?

Mr. H. Barham, who lives at 18 Willow Drive, Hamstreet, Ashford, Kent, has been keeping fish for about one year now. He has two 36in. x 15in. tanks, lit by Gro-Lux, and he finds that it keeps the plants healthy. The plants which he finds grow best in his very hard water are *Vallis*, *Elodea* and *Cabomba*, and those in a 12in. tank grow better than others in a 15in. tank. (Presumably the reason is that the plants in the shallower tank receive more light.) Mr. Barham has never had any bother with green water or other

algae, although he keeps his tank at 80°F, and the lights on for 12-15 hours per day. He says that he has not had much luck with keeping guppies, but suggests that the high temperature may be the cause. His swordtails are a little better, but two broods of young only produced one male out of twenty. He has two tiger barbs which lived with a mixed community of fishes, and he has never had any bother with fin nipping. He has recently bred three spot Gouramies, and now has about eighty small fish growing very quickly. The only live food which he can obtain is *Tubifex*, and he says that one of the best tips which he got concerning the cleaning of *Tubifex* was given in this feature by a junior reader—to clean the worms in milk before use. He asks for readers' information about the red tailed Botia. He asks if anyone can name the plants illustrated in colour on pages 30-31 of "Complete Aquarist's Guide To Freshwater Tropical Fishes", by John Gilbert. (I'm sorry I can't help as I have not yet seen the book.) Mr. Barham ends by asking how one deals with tanks in a room which one wants to re-decorate. He is worried about paint fumes. (I would say turn off your pumps and filters, leave the room doors and windows open, and don't worry too much about the tanks. I have often used this method, and have never lost any fishes. You could cover the tanks with a sheet if you wanted to. Check the water surfaces occasionally, and if any oily layer is seen draw a sheet or two of newspaper over the surface to remove it.)

The next letter comes from Mr. T. M. Baldwin, of 28 Boundary Drive, Hunts Cross, Liverpool, L25 0QD, and he is a relatively new reader of "The Aquarist". He was interested to see my photographs of my adult, green, sailfin Mollies as he recently bought a pair at £1.50. Mr. Baldwin used to specialize in Mollies alone, and had a pair of sailfin lyretails, but he eventually tired of Mollies; however, he decided to add a pair of green sailfins to one of his community tanks. He also bought a pair of albino Mollies, but did not consider these as attractive. He has not yet managed to breed them, but doesn't mind too much as he does not have the space in which to raise the young. When Mr. Baldwin specialized in Mollies, he kept them in hard, alkaline water; but the new pair in his community tank thrive in softer, neutral water. His prize fish at the moment is an African butterfly—*Pantodon buchholzi*—and he would appreciate any feeding tips from readers. He also asks if this fish has ever been bred in captivity. Mr. Baldwin also has a pair of small Clown Loaches, which have recently become very shy, only coming out from behind a pile of slates when the lights are switched off. Mr. Baldwin asks: "Why is this, as they used to be out in the open all day long?"

Continued on page 310

From a Naturalist's Notebook

by Eric Hardy

POND and tank plants soon show us that they grow quicker than land plants. The influence of the so-called growth-inhibiting hormones ethylene and abscisic acid in regulating the starwort's stem extensions has recently been an unexpected discovery. Auxins and gibberellins are the factors in most plant growth. When the starwort's rosette is completely submerged, the quantity of ethylene rises, and its sensitivity to gibberellin increases. The application of ethylene gas stimulates it, and celery-leaved buttercup, to grow more. Abscisic acid likewise stimulated rice seedlings, which are cultivated in water.

For years, more attention has been given in the Isle of Man to marine than freshwater life. Dr. Larch S. Garrad's new 234-page book *The Naturalist in the Isle of Man* (David & Charles, £3.75) makes some amends, as the most complete guide to Manx fauna and flora. Though its index is unfortunately abbreviated, it has distribution-maps and describes historical changes in fauna and flora there whilst noting the extinction of the pearl-mussel, newts and the brackish water tassel-pondweed, *Ruppia maritima*. Its chapter on the wetlands mentions the poverty in pond weeds, excepting for the River Dhoo between Kirby weir and the River Glass and some mill watercourses. *Potamopyrgus jenkinsi* reached Dog Mills stream by 1966. Excepting for stoneflies, water-beetles and ogilochaete worms, little aquatic life has been detailed, though the aquatic Cowin's fly, *Epitriptus cowini* was first discovered near Ballateron (Curragh). A fertile hybrid between the two water plantains *plantago-aquatica* and *lanceolatum* exists in the Dumb river and the Curragh drains. Skunk-cabbage colonised Glen Mona. Apart from trout, eels and a few salmon, fish life is also poor. Frogs are plentiful, and the great clumps of royal fern grow on the Curragh's willow-bog.

There is much scope for the student of water life to add to Manx records. Though this isn't a sporting book, its bibliography might have included John Callin's Manx Fishery Board booklet on "Fishing in and Around the Isle of Man," and, as it deals so much with the historical land changes and place-names, W. W. Gill's 1929 "Manx Scrap Book."

Not far from the crowds at the Waterhead end of Lake Windermere is a very good hunting ground for finding a variety of aquatic plants like lesser water-plantain and birds like nesting snipe.

In Cheshire recently I was interested in the profusion in the dykes and ditches choked with water-

plantain and bur-reeds by the Dee meadows below the bottom of Handbrudge's Pinfold Lane, a suburb of Chester. At the latter place I noticed that creeping jenny still thrives in the ditch-sides where it has grown for over a century. The semi-aquatic orange or short-awned foxtail grass puts up a fine show of colours where this comparative rarity grows in wide patches on Shropshire's Browns Moss, beyond the bottom of Whitchurch's Edgely Road, along with creeping St. John's wort, marsh-clubmoss and other interesting water-side plants. Coming off the North Yorkshire grouse moors recently, I found an interesting little haunt of water-side plants like grass-of-parnassus, butterwort, bogbean, etc., by the feeder stream in the little bird sanctuary bay of wild duck at Scaling Dam, beside the A171 some miles east of Guisborough. Here, the Tees Valley and Cleveland Water Board is building an expansive new field-study centre, angling and yachting club combined. This marshy plant corner is reached down Doghouse or Bughouse Lane, an unmarked, hedgy path, a short distance up the road on the north side of the yacht club entrance.

Batrachoseps aridus is an interesting new species of slender salamander described recently from the lower desert slopes of the Santa Rosa Mountains of Southern California by A. H. Brame of Los Angeles County Museum. He has also described a new salamander *Oedioina gradis* (in the group *Uniformis*) from western Panama. Elsewhere in southern U.S.A., L. E. Brown has shown that natural hybridisation among some relict Texan Houston, Woodhouse and other toads is leading them towards extinction. Incidentally, in Germany, natural hybrids occur between smooth and the palmate newts without such harmful results.

Lizards are known to be hosts of several human infections. Shortly after the last war, when I was secretary of the now defunct Jerusalem Naturalists' Club, I collected some common agama lizards for studies by Prof. R. M. Gordon, at Liverpool School of Tropical Medicine, into the human disease called filariasis, the cause of disfiguring elephantiasis, which is carried by Mediterranean (especially Egyptian) lizards and transmitted by a mosquito. At Otago University, in New Zealand, F. A. and Helen De Hamel have recently, for the first time, incriminated lizards as agents of human salmonellosis. The common skink or wall-lizard there, *Liolopisma zelandica* carries the *Salmonella saintpaul* where outbreaks among humans are increasing, almost always in association with this lizard or its haunts.

Radio telemetry or tracking has moved a long way from transmitting physiological information from astronauts in outer space. After adaptation to use with migrating birds and fishes like salmon, it has recently been used with better results than marking and recapture in nesting studies of female alligators in Louisiana's Rockefeller's Refuge. Kansas University has used it to study heart rates in ornate box-turtles.

In order to save the lizard *Ameiva polops*, an endangered species in the Virgin Islands, the mongoose population numbers are being periodically assessed and an extermination programme carried out against this predator. Meanwhile, conservationists are concerned about several developing countries using crocodiles, sharks, turtles and sea-snakes for exotic leather articles, under United Nations help.

WHAT IS YOUR OPINION? (continued from page 308)

Well, I'm afraid that once again the space has been used up before all the letters. For a future feature please send me your opinions on any of the problems posed in the main body of the text, and on any of the following, remembering to PRINT your name and address, to put the date on your letter, and to enclose an S.A.E. if you require a reply: (a) Which fish comes at the top of the "pecking order" in your community tanks—i.e. which fish seems to be "boss" of all the others, what is its species, and how does it compare in size with the other fishes in the tank? (b) What have been your experiences with the plant, Java Moss? (c) Have you made any further progress with aquarium photography? (d) How much, on average, do you spend on fish foods per month? (e) Have you had any experiences with the keeping of sea-horses? (f) Have you found that small, young Discus seem keener to eat particles of flake foods when these land on the horizontal, flat leaves of such plants as the dwarf lily, than they are to eat similar

particles while floating, while sinking down through the water, or while lying on the gravel? (g) What have been your experiences with the keeping of the Regal Tang? (h) Do you have any original tips which might be of use to other readers? (I recently reached the conclusion that my air pump was dropping off in its air output—until I examined my battery of plastic regulators/clamps, and found that, after several years' use, a collection of oily, black dirt had gathered around the seats of the regulator screws. This was soon removed with a sharpened match stick, and the amount of air supplied to a number of filters was increased considerably. If you use similar air controls, it could be well worth your while to check them. If dirt is cutting down the air supply from the pump, it can be removed in a couple of minutes. It's also worth while checking the small rubber valves in air pumps; again they can be cleaned of dirt with a match stick, or, if worn, can usually be replaced fairly easily.)

PRODUCT REVIEW

Kurier Aquarium Pump, manufactured by Zoobeko, in Western Germany, and distributed by Hillside Aquatics, 29 Dixons Hill Road, Welham Green, Nr. Hatfield, Herts., price £5.20.

There appears to be a large number of new aquarium pumps, of different sizes and designs, coming on to the market at the moment. Of these, the Kurier would appear to have an original feature which I have not yet heard about on any other pump. The makers claim that the pump produces 19 cubic feet of air per hour—but, as I mentioned in a previous review, such a figure has little meaning on its own as no standard tests for aquarium pumps have yet been formulated; however, I understand that this may be remedied in the near future.

The Kurier is a neatly and well designed pump which gives a good air output for its size. The body of the pump is fawn in colour, has a black plastic air filter inlet on the top, a black plastic air outlet on the

side, and a rigid black plastic base complete with four tiny rubber feet; and a "loop" tag at each end by which the pump may be suspended, if desired.

The original feature of the Kurier is a form of "silencer," which cuts down the noise to a low level. The interior of the pump is divided into a large section, in which are the working parts, and a smaller section which, when the base is screwed firmly into position, forms a sealed compartment. As the only exit from the airchamber is into the sealed compartment, this means that the pump is very quiet in operation. (The rigid plastic base is fitted with a black rubber pad on the inside, and when the base of the pump is screwed on to the body with the six appropriate screws, the whole pump, including the two internal sections, is completely sealed.)

Under test, I found that the pump operated an acceptable number of filters, of different types, with a minimum amount of noise, and I would recommend it to anyone who wants a reasonable supply of air for his home tanks without having to leave home because of a noisy air pump.

B. WHITESIDE.

OUR READERS WRITE

Trouble-free Marines

Apparently there are still one or two marine enthusiasts who are not aware of the advantages of high power under-gravel filtration, judging by your correspondent in "Our Readers Write", August issue. Although it is not definitely stated in the letter, it seems certain that the writer does not use this *sine qua non* of marine fishkeeping, since he says "there is U/G filtration . . . when and if necessary."

Being a mariner of only two years standing, I do not claim to be an expert. However, it seems to me that Mr. Graham Cox, in his various books and articles, has laid down the basic rules for successful, trouble free, salt water management, and also put on the market a range of products covering (albeit indirectly) all of Mr. Pedlar's dilemmas. Since adopting Mr. Cox's methods EXACTLY as he suggests, and making no "improvements" of my own (this is where I feel most beginners go wrong), I have had success with marines well beyond my most optimistic expectations.

I have:

(1) experienced no protozoan caused diseases; the only factors causing the death of my fish have been Ichthyophonus and internal flukes which are almost certainly in the fish when they come from the sea and can remain undetected for a considerable time. I can state this quite definitely since I have never lost a fish without subsequently discovering the exact cause of death;

(2) experienced no problems in feeding any fish (I have kept representatives of all the main families) except one tang which after a month still refuses all green algae;

(3) experienced no pollution of any kind whatsoever;

(4) experienced no difficulty in growing very beautiful green algae under artificial light only.

It seems obvious that fish in their natural state have to contend with bacteria and all kinds of parasites. If strong healthy stock are chosen and given the right water conditions they stand a very good chance of going from strength to strength. If a marine tank is initially set up in the right way it appears to be self-regulating to a much higher degree than a comparable fresh-water aquarium. This last statement may seem far-fetched but it is strictly factual so far as my personal experience goes.

Finally, I must state that I am in no way connected with Mr. Graham Cox or any of his business enter-

prises. I hope he will forgive me if I end with a quote from him: "unless we can . . . understand the parameters of the marine biotope, we shall never progress beyond the stage where marine aquarium maintenance is an artform rather than the technically-delimited science which it should be."

C. R. ENGLISH,
469 Rayleigh Road,
Hutton,
Brentwood,
Essex.

Unsung Cancellation

We feel obliged to write this letter for publication in your next issue. We protest most strongly at the behaviour of Tamworth Aquarist Society who, upon announcing an Open Show for Sunday, 27 August in numerous issues of the *Aquarist* magazine, calmly proceeded to cancel the above show without bothering to notify anyone including yourself. Consequently, on Sunday, 27th August Tamworth was full of bewildered exhibitors. This sort of irresponsible behaviour can only bring open shows into disrepute. May this letter act as a deterrent to Tamworth Aquarist Society from making the same mistake again.

D. STONE, Show Secretary,
Chesterfield and District Aquarist
Society.

Standards for Goldfish

In case any of your readers overlooked the advertisement in the recent issue of the *Aquarist*, we wish to draw attention to the fact that the newly revised standard booklet published by the Goldfish Society of Great Britain, to some extent supersedes the second edition issued in 1962. Two further varieties, the Broadtail Moor and the Comet have been added. Only the "metallic" group of the latter variety is acceptable on the show bench. There are a number of small but significant changes in the pointings system, whilst some "type tests" have been tightened. Judges should now be consulting this new edition which should be the guide at future shows. It will definitely be used by the G.S.G.B. judge at the British Aquarists Festival at Belle Vue, Manchester, on 14th-15th October, 1972. Inattention to the revised standards by exhibitors could conceivably lessen chances of gaining awards or even lead to disqualification in some cases. Copies of this 40-page standards booklet can be obtained for 40p, post paid, from R. A. Dodkins, 107 Cobham Road, Seven Kings, Ilford, Essex.

M. D. CLUSE,
Chairman, G.S.G.B. Standards
Committee.

Water Wistaria and Others

I would like to make one or two points concerning statements in the September *Aquarist* by Mr. B. Whiteside.

Firstly that *Synnema triflorum* was named Water Wistaria by myself and identified as *Synnema triflorum* by The Royal Botanical Gardens at Kew from flowering material supplied by me in 1955.

Secondly, *Nomaphila stricta* is quite a different plant from *Hygrophila costata*. *Hygrophila costata* has white flowers and much narrower leaves than *Nomaphila stricta* which has mauve flowers. *Hygrophila costata* is a very unsatisfactory aquarium plant and does not last very well completely submerged.

Concerning the plant which is supplied in the trade from Singapore as Giant Linnophila or Giant Ambulia, there are two very similar plants, *Linnophila heterophylla* and *Linnophila indica*. The former comes from India, Ceylon, Japan and South China, and the latter from tropical and sub-tropical Asia, Australia, and tropical Africa. I have received both plants and one has mauve flowers and the other white. I am not completely certain which is which, but I rather believe that *L. heterophylla* has the white flowers and *L. indica* the mauve, and that the former plant seems to do far better under water than the latter. I have received the former from Ceylon and the latter from Singapore.

These points might be of interest.

C. D. ROE,
Director,
Shirley Aquatics Ltd.

Marines

I hope you print this letter as this magazine is the finest way to get more people to have a go at the most wonderful of all fishes, that is MARINES.

I know that a lot of people think it's just a waste of time to buy expensive fish just to see them die, but it's not at all like that. Many fish lovers this year at Bengly Hall saw a wonderful stand that members of the B.M.A.A. West Midland Group had put on.

There were seven all-glass tanks, four tanks of Tropical marines and three Native Marines. Altogether a very fine show of fish.

West Midland members of the B.M.A.A. had done a lot of hard work on its stand, and the West Midland Group Secretary, I wish to thank all members for a fine show. Members such as those in the West Midland make this Marine keeping worth all the hard work it takes worthwhile.

R. EDWARDS,
West Midland Group
Secretary.

British Society—Multi-Racial Fish

As Public Relations Officer of the British Marine Aquarists' Association, I meet various and interesting

people to discuss and exchange ideas to further the marine hobby in Great Britain.

To my amazement there are a number of people who are under the impression that because our Association is so-named "British" Marine Aquarists Association, we only deal in British or Native Marines.

I would like to say at this point that the Association deals not only with Native Marines, but all aspects of the marine world.

For relative information on how to join our Association, please write to our chairman, Mr. D. Highfield, B.M.A.A.I., 119 Kent Road, Woods Estate, Wednesbury, Staffs.

Resignation

Owing to unforeseen commitments Mr. J. Haynes, B.M.A.A. 28 (the Association's chairman of the judging and show standards), has resigned from this post.

The Association has appointed a new chairman of judging and show standards. His name is Mr. L. H. Doubleday, B.M.A.A. 14 (hon. group secretary of our South Western Group).

In the future any Aquarists Association which wishes to run a Marine Class in its show and requires an expert judge, please contact Mr. L. H. Doubleday, B.M.A.A.14, 69a Newton Road, Torquay, TQ2 7BL.

MR. M. STRONG, B.M.A.A.51,
Public Relations Officer,
British Marine Aquarists
Association,
38 Plasterton Avenue,
Canton, Cardiff, CF1 9HH,
S. Wales.

White Spot

I see in the queries pages of the September issue of the *Aquarist*, that a reader is having trouble with white spot, and you answer that it is not possible to kill this parasite on the fish. I have for years now been dealing with this both for myself and friends and have no trouble killing it on the fish. The treatment is sulphadiazine sodium solution 33% per cent, and the dosage is 1cc. to 7 imperial gallons of water. The cure is completed in 5 days. If not, then a further half-dose may be given without damage to fish or plants. I am glad to pass on any information which may help, through the *Aquarist*.

Yours faithfully,
WILLIAM MCGARRITY,
36 Denmilne Street,
Glasgow, E.4.

Criticism

Having read the articles by Mr. Arthur Boarder on "Breeding Goldfish—the Fancy Variety," and the book review on "The Standards of the Goldfish Society of

Great Britain," in the September issue of the *Aquarist and Pondkeeper*, I feel I should point out one or two facts that I consider to be incorrect.

In the article "The Fancy Variety," Mr. Boarder mentions once again the fact that he has bred Fantails since 1937, this of course is well known to readers of this magazine, as it appears on numerous occasions. However, he mentions a Fantail with very long ribbon-like tails, which, after much thought he chooses to name "Ribbon Tails." I have it on good authority that such fish have been imported into this country from Japan and China for many years under this very name. As Mr. Boarder so rightly says in his second article, he has only been keeping fish for 72 years, and he may have missed the odd one or two.

This is not all he has missed! When he makes criticisms of the standards of the Goldfish Society of Great Britain, in particular the paragraph concerning the pearl scale, he states, that in his opinion a calico pearl scale does not exist. It is a pity that he did not pay a visit to the Birmingham Open Show held at Bingley Hall this year, where the Best Coldwater Fish in the Show, was in fact an adult Calico Pearl Scale, and a very fine specimen too!

His views on the Pom-Pom again are open to criticism, as he cannot ever remember seeing a scaled specimen. If Mr. Boarder would care to write to me, I will gladly furnish him with details of a well-known breeder in the West Country who has among his collection a metallic Pom-Pom, silver and orange in colour.

I, myself, being a newcomer to the world of the aquarist, have been misled and misguided on numerous occasions by Mr. Boarder's articles. It may be better for him, when writing future articles, to take a less single-minded attitude towards one particular variety of fish, and accept the possibility of the existence of varieties he may not have seen.

I feel this letter would be of particular interest to other newcomers to the fishkeeping world, and I ask that it be considered for publication in your next issue.

Yours faithfully,
M. T. MASON (M.A.P.S.),
20 Malcolm Avenue,
Erdington,
Birmingham, B24 0EE.

—And Response

I am delighted to note that I have at least one regular reader of my articles. That he does not agree with me does not surprise me one little bit. I, as a free-lance writer, write mainly on my own personal experiences and with my own opinions. The man who can have hundreds of articles published and not have anyone disagreeing with him is not yet born. Even Members of Parliament can rarely agree and I have yet to watch

a TV debate in which the participants end up in agreement.

There appears to be some doubt as to what constitutes a "calico" fish. The definition which I knew for many years was that it was a scale-less fish or shubunkin type. This fish should show no visible (hard) scales at all, and so how can such a fish be a calico pearl scale, as such a fish must have hard, cup-shaped, protruding scales?

Yours faithfully,
A. BOARDER.
Ruislip.

Dow Corning to the Rescue

In the last year I bought the Esha 400 Plus. As it is the most expensive pump on the market, I thought it would give me YEARS of trouble-free service.

In the first two months I used two diaphragms and after could get no more.

After that I put the pump in storage, hoping to get replacement parts at my local shop but he could not get any.

At last I rang the import agent to be informed that the company in Germany had been unable to make a diaphragm to last any length of time.

After that I thought about the problem. The only diaphragm I had was unserviceable with a one inch split in it. On this I used Dow Corning on both sides all over and up to now I've had no trouble with it.

As I know many people are in the same boat as me, I trust you might give this useful tip to your readers.

J. STAFFORD,
106 Denninson Point,
Gibbins Road,
Stratford, E.15.

Lethal Packaging

The large amount of correspondence received by this firm usually offers up at least one howler each week and this, not surprisingly, usually arrives in a foreign price list or letter.

One letter received this week from a firm in Ceylon included the following paragraph as part of the persuasion calculated to establish trade between us!

"For your information we do all our packing in five-ply corrugated cardboard cartons with moulded half inch styrofoam boxes as inner lining, for maximum insulation. This indeed cuts down the rate of mortality to 100%."

MAX GIBBS,
The Goldfish Bowl,
Oxford.

Continued on page 317

FISHES FOR TANKS AND PONDS

by Arthur Boarder

I AM OFTEN ASKED by aquarists which fishes can be safely kept together in tanks and ponds. The general answer to this question is easy to answer as apart from the carnivorous types such as Pike (*Esox lucius*), and the Perch (*Perca fluviatilis*), most of the British cold-water fishes could be kept together. Whether they are all suitable for mixing depends on the size of the tank or container. Those of fairly fast running waters are not as likely to thrive under the same conditions as those which would adequately suit those from still waters. Also some of these fishes can grow too large

will be generally agreed that the common goldfish is the best fish for the average or small tank. It is hardy, cheap to buy and little trouble to keep. It does not grow as quickly as some fishes, especially if it is not fed too much. Of course, there are several varieties of fancy goldfish which are ideal for the indoor tank but if one is a beginner at the hobby of fishkeeping, I suggest that until some experience has been gained it is better to stick to the ordinary goldfish.

A very good fish for one who would like something a little different for the tank, is the Shubunkin, an



Golden Tench. Colourful pond fish

for the average tank. The question now arises as to what is the average size for a tank. I suppose that this will mean different measurements to varied aquarists, but to me, an average tank is one of $24 \times 12 \times 12$ in. and I do not think that there are many of the British fishes suited to a tank of this size.

Nothing looks worse than very large fishes in a small tank. For the average tank I do not like to see any fish larger than three inches over all. Even at this size there should not be more than three fishes. Four fishes of a two inch body length will usually look well in such a tank, provided it is properly planted. I am sure that it

excellent fish with bright colours that make it particularly attractive. Shubunkins are also as good movers as the common goldfish and of course could be kept with these. Another fine variety for such a tank is the fantail. This fish is as easy to keep in a tank as either of the two mentioned. These can be had in varied colours, such as all gold or all silver, gold and silver, or shubunkin-coloured. Lionheads are also quite attractive in the tank and present no problems as to feeding and require no special treatment. The comet goldfish is not as good for the average tank, as it is a fast swimmer and needs plenty of space, say in a tank



Veiltail goldfish. Ideal tank fish

not less than 36 in. long. Even then the fish should not be more than about three in. long over all. The pearl-scale, being another type of fantail, could also be kept in the indoor tank.

One or two of the other fancy varieties of goldfish may be a little more difficult to keep by anyone who has not had some experience at fishkeeping. Those with enlarged finnage, such as veiltails, orandas and veiltail-moors can present some problems unless they have plenty of space and not too cold a water temperature. Not that they cannot stand the temperatures usually found in the indoor tank, but in the winter, in an unheated tank or room, they could become rather sluggish and are then prone to attacks by fin-rot or fin congestion. Also these long-tailed fishes are usually not as active as some of the others mentioned and many are inclined to sit on the bottom of the tank, and are not given to moving around as well as those varieties



Crucian carp. A pond fish

November, 1972

with smaller finnage. An important point to watch when introducing these fancy varieties is to make sure that you know in what temperature the fishes have been kept before you purchase them. Many such fishes have been bred and reared under quite warm conditions and if placed suddenly into cold water, they can soon be in trouble.

Having given some of the goldfish types which are suitable for the indoor tank, I will give some advice as to which other species of freshwater fish are suitable to be included with such fishes. Now, although there are several coldwater fishes which could be mixed, it is important to consider how large and how quickly they are likely to grow. It is a far different question as to which fish for the tank than that of which fish for the pond. I would not recommend many freshwater fishes for any tank which is of average or small size. Sticklebacks (*Gasterosteus aculeatus*), is an interesting little fish for the average tank but I do not recommend that it should be kept with goldfish. A few in a well-planted average sized tank can be a great attraction and if only one male is kept with several females, breeding could take place.

Another small fish suitable for the tank is the



Common carp

Bitterling (*Rhodeus sericeus*). Although it is normally a European or Asiatic fish, there have been many introduced into certain waters in this country, but it cannot be called a British fish. Nevertheless as it is not likely to grow more than about three and a half in., in either tank or pond, it could be included with other fishes of about the same size. Whilst mentioning this matter of size, I am sure that, to keep a tank looking natural, one should always try to keep all the fishes of nearly the same size. To have one very large fish with smaller ones will never look right in a tank.

The Gudgeon (*Gobio gobio*), is another small fish, reaching about five and a half in. in length, which is suitable for the rather larger tank, but the water must be kept very clean and pure, with a gravelly bottom. Aeration will also help to keep these fish healthy. Another smallish fish is the Minnow (*Phoxinus phoxinus*), which



The pike. Handsome aquarium fish when small

grows to a length of about five and a half in. Again this fish requires a well oxygenated water in which to thrive. The Dace (*Leuciscus leuciscus*), is another fish which appreciates a very clean and oxygenated water as it is essentially a river fish. It can grow larger than the above mentioned trio, reaching ten inches in length in good waters. For these freshwater fishes I think that the tank should not be less than 36 inches long, and then only small specimens should be kept.

The green Tench (*Tinca tinca*), is another fish suitable for the tank as long as it is a small specimen. The very young ones, say up to two years old are particularly attractive as they have a bluish hue to their underparts and have a distinct black triangular patch on the caudal peduncle. I remember exhibiting a team of six young tench I had reared when they were about 2 in. long and few aquarists were able to name them as they had the appearance of some tropicals. If they are well fed these fish can grow fairly quickly and so should not be kept in a smallish tank once they have become over three inches long. The golden variety of the tench is also a very handsome fish for the tank, but again do not keep them too long in such a container if they grow too big.

The common carp (*Cyprinus carpio*), are only suitable for the average tank when small, and the same applies to the Crucian carp (*Carassius carassius*); the Prussian carp (*Carassius auratus gibelio*) and the variety Mirror carp, which should be removed to the garden pond when over three in. long overall, unless the tank is a large one of up to or over 36 in. long.

Several other freshwater fishes can be kept, such as the Bleak (*Alburnus alburnus*), and small specimens of the Rudd (*Scardinius erythrophthalmus*), the Roach (*Rutilus rutilus*), but the first-named needs well oxygenated water and the Rudd is more suitable for keeping in captivity than the Roach. The Roach appears to be very prone to attacks of Fungus disease, but this is probably because the fish is so thickly covered with mucus (slime), much of which is removed when the fish is caught leaving the fish open to attack by diseases. Such fishes as the Ruffe or Pope (*Acerina cernus*), the Loaches (*Cobitis taenia*), and (*Cobitis*

barbatula), do not appear to do well in indoor tanks and are not interesting enough for the garden pond.

Although I have mentioned the Pike and the Perch as unsuitable for a tank with other species, I do not suggest that they cannot be kept in tanks by themselves. A very small Pike is one of the handsomest fishes we have in our native waters and if one can give the fish plenty of space and an adequate supply of live food, plenty of interest and enjoyment can be obtained from doing so. A few small Perch in a fairly large tank are also most attractive, as this fish is one of the best marked of our native species.



Perch. Attractive but no mixer

When the garden pond is being stocked there is a far larger range of fishes with which it can be stocked. All the fishes mentioned, with the exception of the Pike and Perch, can be kept although some of them are not very suitable as their darkish back colours make them rather inconspicuous in a deepish pond. I suppose that if I was asked which is the best fish for the pond, I would have no hesitation in recommending the Golden Orfe (*Idus idus*). I know of no better fish for the garden pond, but I must make one qualification. This fish is a fast-growing one and one which must have a very well-oxygenated water if it is to thrive. For the small pond I do not think it is satisfactory.

It may be all right for a time if small but once it gets about 6 in. long it should be in a larger pond. Perhaps, at this stage I can state what in my opinion is a small pond. Of course everyone will have his own ideas of this but when I write about garden ponds I consider that any pond not more than 7 x 5 ft. is a small one, not more than 14 x 10 ft. is a medium one and above that size is a large one. These measurements apply to garden ponds and not to those small lakes found in the grounds of stately homes. Therefore the Golden Orfe is an ideal fish for the medium and large pond. The Orfe shoal well and usually keep to the surface or near to it. They are also surface feeders and so if any food is thrown on the top of the water, this will bring the Orfe up into sight very quickly.

A more recent introduction for the garden pond is the Koi. Again this fish is more suited to the medium and large pond. Koi can grow quite large and so to try to keep them for long in a small pond would be a mistake. Another fine fish for the medium and large pond is the Hi-goi. This is a sturdy fish with some fine colours and I consider it to be rather hardier than the Koi. It can grow to a large weight and so needs plenty of space if it is to develop to its maximum size.

Some of our British fishes are not very suitable for the garden pond as they may be bottom-feeders or spend most of their time near the bottom of the pond. The Tench is a good fish, especially the golden variety and although, perhaps for most of the day it will remain below, out of sight, it will come to the surface to take food, or lie basking under a water-lily leaf in the summer. Such fishes as Bream (*Blicca bjoernka*), are not suitable as they are deep swimming, sluggish with a dark back which would not show up much in a pond.

The Chub (*Leuciscus cephalus*), is a good fish when small, but is likely to grow too large for many ponds and so should not be used except when very small. One must also realise that the river fish, especially those coming from fast waters, are not suitable for the pond. If one can provide a waterfall or a fountain, it is possible to succeed with some of these fishes, but generally speaking any fish from fast-flowing rivers are not likely to do well in a garden pond. Even Orfe can be kept healthy in a small pond with the aid of fountain or fall, but even then they cannot be expected to grow well in such a restricted space.

The Rudd, especially the golden variety, is very good for the pond. Small ones in the small pond will do as long as they are not more than 3 in. long. Roach are best kept from the pond, as although I know of cases where they have been kept quite successfully, I also know of many cases where they have introduced Fungus disease into ponds. The Rudd is a rather similar fish and is more likely to thrive in the garden pond.

I have not mentioned the various goldfish types which can be kept, but these are generally well known. They will do extremely well if they are not of the

varieties which have flowing finnage. Although some of these may do well in some parts of the country, if too severe weather freezes the pond for too long, the fish may be in trouble, as their long finnage is so liable to attacks of fin congestion, fin-rot and Fungus disease.

The usual garden pond of from medium to large size can house goldfish in varieties, Orfe, Hi-goi, Koi, Tench (golden and green), Rudd (golden and silver) and, if well kept, Minnows. I have omitted Catfish, as I consider these can be dangerous to smaller fishes and are no more good as scavengers than goldfish, especially if too much food is not continuously given. The secret of success with the pond is that it should not be overstocked nor should the fish be overfed at any time. Also realise that many fish do not need as much food in winter as they do in spring and summer.

I have omitted the Trout from my list of fishes for tank or pond as unless one has plenty of space and either running water or water that is well oxygenated this fish is not likely to remain alive for long.

OUR READERS WRITE

continued from page 313

Slides for Societies

I am compiling a list of films and slides for use by Aquarist Societies.

Will you please ask your readers to let me know if they have any entries which should be included, such as slide programmes produced by their own Society.

J. BLAND,
Programme Aids Secretary,
Federation of Northern Aquarium
Societies,
5 Cumberhills Road,
Duffield, Derby.

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THE HARDY EUROPEAN REPTILES AND AMPHIBIANS IN CAPTIVITY (Part 7)

by *Andrew Allen*

13. The Common Toad (*Bufo b. bufo*)

Description.—This is rather a thick-set animal growing to a length of about 14 cms. in the female, but considerably less in the male. The broad back is covered with large warts, and there is a very prominent parotid gland. The tympanum is almost invisible, there are no vocal sacs, and very little webbing on the feet. In season the male possesses nuptial pads. Dorsal coloration varies through yellow and light brown, to red, grey and black, but always in subdued tones and with no particular sets of markings. Ventrally it is off-white in colour, flecked with greys and browns. It is the type species of the family Bufonidae, and also its most familiar member.

Distribution.—The Common toad is found almost throughout the whole of Europe, including Britain but not Ireland. Beyond Europe it extends through the entire temperate zones of Asia to the shores of the Pacific and even Japan. It can be encountered in a wide range of habitats, notably fields, woods and gardens, generally, but not always, in moist locations.

Breeding Habits.—Mating takes place during late March or early April. The toads migrate to suitable ponds from considerable distances, the male giving a highly repetitive croak that is high in pitch but low in volume. Amplexus is axillary. Up to seven thousand eggs are laid in long strings that are wound around aquatic plants, usually in fairly deep water. The tadpoles are small and black, and undergo a normal metamorphosis.

Care in Captivity.—This toad poses few special problems in captivity, settles down rapidly and will live to a ripe old age.

It will do very well in the indoor vivarium, though it is surely superfluous to keep it under such conditions. The amateur can readily observe its habits in the wild, or in the ideal conditions of the various types of outdoor

vivarium. Though the ordinary herpetologist will not want to keep this species indoors, it may be necessary to do so in educational or scientific institutions. In such cases the first requisite is a vivarium or aquarium of about four or five feet in length, well ventilated and placed in a shady, but not a dark, corner. It should be provided with a shallow water bowl, several caves and shelters embedded in a flooring of deep soil and moss, and planted fairly heavily with sturdy vegetation.

Troubles will come with the winter. Do you over-winter the toads or do you hibernate them? In the natural state these animals always undergo a period of hibernation, and this is closely integrated into their behavioural and physiological life cycles. To disrupt these can be dangerous, and will certainly be highly unsettling to the toads. Any possibility of successful breeding activity at the normal time will be destroyed. In general over-wintering is harmful to the toads, but is the easy alternative for the vivarium keeper. To hibernate these animals is far more desirable, but is also a rather bothersome business. Either a great big heavy vivarium must be half filled with leaves and moss and moved en bloc to a suitably cool, frost-proof outhouse, or the toads must be transferred to an insulated box filled with the same materials and placed in the same location. The first of these ways requires the aid of several strong men, the second is again unsettling to the inmates of the vivarium. Both require a fine sense of timing, and careful observation of judiciously situated thermometers.

Once winter is successfully past, the breeding season is upon us. The toads may or may not wish to breed, depending upon just how much their reproductive cycles have been disrupted. If they do show signs of wishing to mate, they should be moved to another vivarium containing a very large pool, possibly

one that is normally inhabited by aquatic species like newts or Fire-bellied toads. Obviously this arrangement is far from ideal, and if the toads' vivarium is sufficiently large it should contain a substantial pool of its own. If tadpoles result, the majority should be moved to a nearby pond (preferably one where toads are known to breed), and only a small number retained for display or experimental purposes. Though they are quite well suited to a role as a display animal in the indoor vivarium, there are far better ways of keeping this species.

Supreme among these is simply a walled garden. Toads will settle down magnificently in an "old-fashioned" enclosed garden with a suitable pond, a rockery and a wealth of weeds and shady shrubs.

the point of view of the toads, but places no restrictions on their wanderings. However, if the conditions are good enough, they should stay. The only disadvantage to giving these toads the run of the garden is that they are principally nocturnal and emerge but rarely during daylight hours. Probably the best way to observe them is to stroll out on a suitable evening with a torch and a plate full of mealworms. With a little luck they should pick up the idea fairly quickly and become reasonably tame, especially if you make your visit at the same time each night.

For those who wish to keep their toads under closer supervision and observation, the best alternative to a walled garden is a reptiliary, which could well be described as a "mini walled garden." Here again the



Common toads in amplexus and depositing spawn

Under such conditions they should breed regularly each spring, and remain for a good many years. There are several recorded instances where toads have lived in the same garden for twenty years, and they can survive to well beyond this figure. A few broken clay flowerpots scattered around will be much appreciated as shelters. They will choose their own hibernacula and find all their own food—helping to control your slugs and woodlice in the process. Obviously they should not be enclosed in a garden that also contains such arch enemies as Grass snakes or Hedgehogs, and Cats, Rats, Rooks and Seagulls should also be discouraged. An unwalled garden is equally good from

toads should settle down with perfect equanimity provided that their modest requirements of a pond and some cool, shady corners are met. It should be remembered that, though rather clumsy in appearance, toads possess considerable determination and are adept at escape. A containing wall of about three feet in height and an overhang of about nine inches are both essential features of a reptiliary designed to house the Common toad.

Cold frame and greenhouse can both be converted into excellent homes for this species. But it is essential to ensure that deep shade is readily accessible, as no toads enjoy the heat and both these forms of accom-

modation can warm up a great deal on sunny days. I have kept *B. bufo* in a fairly dry greenhouse and a very damp cold-frame, and it has prospered in both cases, though it is more often on view in the latter.

Comments upon the feeding habits of the Common toad need not detain us very long, for its dietary requirements are perhaps the simplest of all the hardy Reptiles and Amphibians. Nearly everything that is small and moves will be taken with an instantaneous, eye-deceiving flick of the tongue, be it earthworm, spider, slug, woodlouse, beetle, fly, caterpillar, blowfly larva, ant or many other minor invertebrate. Large Southern specimens are perfectly capable of dealing with a small lizard or a young mouse, though they will readily accept traditional insect fare. Most toads consider the mealworm, larva of the Tenebrio beetle, to be the *piece de resistance* among invertebrate foods, and in general they show more discrimination in their diet than do the rather less intelligent frogs.

The ordinary sized toads of Northern Europe make excellent community animals and can be kept in company with a wealth of other hardy and semi-hardy Reptiles and Amphibians. Their poisonous secretion and medium size makes them safe from all but the snakes and larger terrapins. On the other hand, it will molest few or none of its smaller companions, except perhaps juvenile frogs and newts in the first few weeks after they leave the water. This means that it can comfortably accompany all the lizards, tortoises, frogs, toads, newts and salamanders. These observations must be modified somewhat when considering large specimens from Southern and Eastern Europe, and the "giant" sub-species that we will describe a little later. Such specimens could perhaps be kept with small Dice, Grass and Viperine snakes, though it is not an arrangement that I would recommend. These toads are well able to eat small snakes, indeed I came across a case in France where a fat female toad had happily consumed a whole family of young Adders! Another drawback is that the snakes may eventually grow to a size where they regard the toads as a well-timed

addition to the larder. The balance between these snakes and the largest toads is always a rather delicate matter. "Giant" toads should not be associated with small lizards, Slow-worms, any newts, or the lesser frogs and toads in any vivarium, however spacious. Suitable companions would be land tortoises, Green, Eyed and Schrieberi's lizards, Clawed toads, adult Common frogs, and Marsh and Edible frogs.

The Common toad makes one of the worthiest possible members of any collection of Reptilia and Amphibia. If anything it is almost too tolerant, and will survive for long periods in indifferent conditions. It is far from being a spectacular or glamorous creature, and is quiet and unobtrusive in its habits. But what it lacks in looks, it makes up for in character. By Amphibian standards this species is very intelligent, and those who know their toads find them a constant source of fascination. They tame rapidly and have none of the nervous flightiness of the majority of frogs. There are few more appealing animals, and they can be recommended wholeheartedly to any vivarium enthusiast, young or old. But please remember that their numbers are on the decrease, and do nothing that could jeopardise their already shaky status. Injudicious collecting has done much to bring Sand lizard and Natterjack toad to the brink of extinction in this country, and it could yet do the same for the Common toad.

B.b.gredosicola comes from the Sierra de Gredos in Spain, and has very prominent parotid glands.

In the preceding paragraphs we have mentioned the so-called "giant toads." The sub-species that qualifies for this rather dubious title is *B.b.spinosa*, which is found in Southern Europe, Asia Minor and North Africa. Old female specimens grow to considerable sizes, with recorded lengths of 20 cms., which may make this sub-species the largest batrachian in Europe. On old specimens the warts bear noticeable spines.

The next article will consider the two other European members of the Bufonidae, the Natterjack and the Green or Changeable toads.

MY CLIMBING PERCH

by S. Haill (aged 15 yrs.)

ABOUT eight months ago, I was doing my weekly rounds of the pet shops, when I came across a tank

with climbing perch marked on it. On enquiring, I discovered to my surprise that they cost a meagre

25 pence each and being attracted to less ordinary fish, I asked if I could have one. The helpful dealer explained that they grew to some 10 inches long and could be very vicious. This did not deter me, however, because I kept cichlids.

On arriving home, I placed the plastic bag in the tank and looked at my purchase. Staring back at me was a rather nondescript looking brown fish about 1½ inches long. Unimpressed, I released it into my tank which contained my rapidly growing oscar. There was a great difference in size between the two fish but still they did not fight. At feeding time, when I chopped up oscar's earthworms and threw them into the tank, the perch was there, trying to eat as much as he could. Every day he would be ready for his food and he soon started to grow.

I started to wonder whether he would "climb" or not if removed from the tank. I could not, however, find a suitable rock that would stick out of the water. One morning I grabbed my net and captured him as he was coming up for air. I placed him on the kitchen table and he immediately flopped over on his side. I watched for a few seconds and as I did so he stuck out his gills and the spines at the base of them got him to a position where he was sitting on his belly. Soon after this he began to wriggle his body and as he did

so started to move with surprising rapidity over the smooth table. Not wishing to harm him at all, I put him back in the tank greatly impressed by what I had seen.

After having him for about three months, I acquired a three-foot aquarium which I made into a cichlid tank. I introduced my climbing perch, along with oscar, a severum, a tinfoil barb, a blue acara, a talking catfish and an opaline gourami. My fish seemed to get on well together and all started growing faster, especially the climbing perch and oscar. The perch ate as much as any of them, its food ranging from rabbit-flavoured cat food to pond pellets and various live foods. He is the only one in the tank who will eat caterpillars. The tank is kept at about 75°F with hardly any plants; the trouble is that it usually looks a bit of a mess.

I have brought him out for a "run" several times now and I am looking for some bark to float in the tank that he could sit on. He is nearly six inches long now and the same brown colour as when I first got him. As to being vicious, he gets on very well with an opaline gourami that is half his size. He is now very tame and an interesting addition to anyone's aquarium who does not mind a bit of muck on the gravel.

Rasbora hengeli

by Jack Hems



THIS SPECIES from Sumatra appears somewhat like a smaller edition of the better known harlequin fish (*R. heteromorpha*). But take a good look at the fish, and you will see that the metallic tints are more subdued. And there is one more thing to notice. The blue-black marking that adorns the sides is more of a narrowing stripe than a bold copper-margined triangle.

Although Hengel's rasbora, sometimes called the queen rasbora (I cannot imagine why), was new to science in 1956 (it was described in this year by Hermann Meinken, the German ichthyologist), it was not new to the hobby. As a matter of fact, it had appeared in the tanks of dealers (except those in America) some two years earlier. Meinken named it after J. F. van Hengel, of Aquarium Westhandel, Amsterdam, Holland, who imported the first specimens into Europe.

In its natural state, *R. hengeli* inhabits waters thick with plants, that act as a barrier to sunlight. The waters are low in dissolved minerals, or, put in another way, very soft, and the pH reaction is acid.

In captivity, therefore, this species flourishes best in the sort of aquarium that suits *R. heteromorpha*. It is much smaller than the harlequin fish and at full size the male is not more than an inch. The female attains about ¼ in. larger. In appearance the fish is less chunky than *R. heteromorpha*.

Hengel's rasbora frequents the middle and upper levels of the water (in the aquarium, at any rate) is a shoaling species, and mixes well with other diminutive tropicals such as *R. maculata*, *R. vaterifloris*, *R. urophthalma* and *Ctenops pumilus*, one of the most charming of the smaller gouramis. Another point in its favour is that it will accept any small live or dried food most readily.

The spawning habits of *R. hengeli* are similar to those of *R. heteromorpha*, but the fish is neither a free nor easy breeder. Generally speaking, it is hardy—it has a range of temperature from about 70°F. (21°C) to 86°F (30°C)—and given clean, well-aerated water, will live for upward of three years.



from AQUARISTS' SOCIETIES

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

THE Goole and District A.S. had a full calendar of events during September. There were three club meetings, one social night, and a display stand at a local flower exhibition. The early meeting in September was devoted to routine business and arrangements were made to set up and man the Society's display stand in the Chrysanthemum Exhibition. The next two meetings consisted of a talk on breeding by two members of the Hull club, and a slide show on tropical fish in general. Also in the month a social and prize giving was held in Thorne for members of the Goole, Hull, and Thorne Societies. Plaques were presented to the winners of the different classes in the inter-club fish shows.

Results of the two table shows were as follows: Cichlids: P. Walker; Pairs: Miss J. Harvey and Mr. R. Holt.

AN interesting slide show on "The World of Fishes" and a talk was given by Mr. B. Pyc of Brentwood at the October meeting of the **Chelmsford A.S.**

The four table prizes of fish and fish food were won by Kevin Machin, P. Meadows, Mr. Rumbrook and Mrs. Bailey. The table show for awards was won by P. Meadows, second being R. Knight, and third being P. Meadows in the Sword class. In the Platy class the winner was J. Newin.

RESULTS of Lincoln and District A.S. open show were as follows: Guppies: 1, E. Kirk (Grimsby); 2, G. Andrews (Hull); 3, M. Laycock (Sheffield). Swordtails: 1 and 2, E. Kirk (Grimsby); 3, T. Douglas (Hull). Mollys: 1 and 2, S. Harrison (Sherwood); 3, D. Pitchford (Castleford). Platies: 1, Mr. and Mrs. Daines (Doncaster); 2, Mr. and Mrs. K. Blades (Crewe); 3, T. Walker (Grimsby). Small Barbs: 1, T. Shepherd (Doncaster); 2, Mr. and Mrs. Blades (Crewe); 3, M. Fossil (Alfreton). Large Barbs: 1 and 3, R. Clarke (Sherwood); 2, Mr. and Mrs. Bland (Sheffield). Small Characins: 1, Mr. and Mrs. Blades (Crewe); 2 and 3, Mr. and Mrs. Pogson (Scunthorpe). Large Characins: 1, Mr. and Mrs. Downing (Sherwood); 2, Mr. and Mrs. Bailey (Sherwood); 3, D. Barnett (Leicester). Killifish: 1, C. Muddimer (Leicester F.K.); 2, Mr. and Mrs. Harris (Gainsborough); 3, T. Smith (Sheffield). Minnows and Danios: 1, Mr. and Mrs. Blades (Crewe); 2, N. Carr (Doncaster); 3, T. Smith (Sheffield). Sharks and Foxes: 1, T. Smith (Sheffield); 2, T. Douglas (Hull); 3, Mr. and Mrs. Blizard (Sheffield). Rasboras: 1, Mr. and Mrs. Downing (Sherwood); 2, W. Gilding (Gainsborough); 3, H. Snowden (York). Dwarf Cichlids: 1, Mr. and Mrs. Hatfield (Gainsborough); 2, H. Hopewell (Workop); 3, J.

Rodgers (Crewe). Large Cichlids: 1, D. Kenton (Belle Vue); 2, Mr. and Mrs. Stephenson (Sherwood); 3, H. Bunnage (Lincoln). Angels: 1 and 2, R. Clarke (Sherwood); 3, E. Kirk (Grimsby). Catfish: 1 and 2, E. Homes (Grimsby); 3, T. Smith (Sheffield). Loaches: 1, R. Clarke (Sherwood); 2, Mr. and Mrs. Davison (Gainsborough); 3, J. Pearson (Workop). Fishers: 1, Mr. and Mrs. Pogson (Scunthorpe); 2, A. Marson (Workop); 3, Mr. and Mrs. Toyne (Sheffield). A. O. V. Anabantids: 1, E. Kirk (Grimsby); 2, Mr. and Mrs. Bailey (Sherwood); 3, A. Head (Keighley). Novice Class: 1, D. Foster (Crewe); 2, H. Snowden (York); 3, J. Pearson (Workop). Pairs (Egglayers): 1, Mr. and Mrs. Blades (Crewe); 2 and 3, Mr. and Mrs. Pogson (Scunthorpe). Pairs (Livebearers): 1 and 2, Mr. and Mrs. Stephenson (Sherwood); 3, S. Clarke (Barnsley). Junior Egglayers: 1, G. Allen (Workop); 2 and 3, S. Clarke (Sherwood). Junior Livebearers: 1, S. Clarke (Sherwood); 2 and 3, D. Stevens (Castleford). Goldfish and Comets: 1, T. Dobbs (Lincoln); 2, B. Rodgers (Crewe); 3, Mr. and Mrs. Toyne (Sheffield). Shubunkins and Fancy Goldfish: 1, B. Rodgers (Crewe); 2 and 3, C. Cartwright (Leicester). Breeders (Egglayers): Mr. and Mrs. Blades (Crewe); 2, P. Spillhouse (Workop); 3, Mr. and Mrs. D. Stevens (Castleford). Breeders (Livebearers): 1, T. Douglas (Hull); 2, G. Andrews (Hull); 3, P. Spillhouse (Workop).

OFFICIALS of Bethnal Green A.S. are: Chairman, D. Bundy; secretary, D. Adams, 30 Waddington Street, Stratford, E.15; treasurer, J. Hayes; show secretary, Mrs. S. Hedges, 150 Ashburton Avenue, Seven Kings, Ilford; assistant A. J. Bullock. New members and visitors welcome to meetings every Tuesday, 7.45 p.m. at Bethnal Green Institute, 229 Bethnal Green Road, London, E.2.

THE Roshampton A.S. held an inter-club match with **Riverside A.S.** recently and Roshampton narrowly won the match with 21 points to the Riverside total of 19 points. The judge was P. Ginger of the F.B.A.S.

OFFICERS elected at the annual general meeting of the **Knowle and District A.S., Bristol** were as follows: Chairman, E. Newman; Vice-Chairman, J. Stirling; secretary, P. Randall; treasurer, W. Perry; programme officer, D. Owen; reporting secretary, Mrs. E. Webb. A very interesting programme for the forthcoming monthly meetings was tabled by the Chairman to include a table show each month, a furnished aquaria competition and arrangements are being made for talks to be given by well-known speakers. At the meeting on 2nd October, an excellent talk and demonstration was given by S. Lloyd on Coldwater Fish. Mr. Lloyd then judged the Coldwater table show and cards were awarded as follows: 1 and 2, Open award, W. Hann; 3, J. Stirling; 1, 2 and 3 Novice, J. Stirling.

The November meetings of the **Merseyside A.S.** will include a lecture by R. Hasey on Killifish to be held on 7th November and a table show will be the main item at the 21st November meeting.

RESULTS of the Hetton County A.S. were: Guppies: 1, 3 and 4, L. Leadbetter (Blackpool); 2, R. Davison (Ashington). Platies: 1, R. Crombie (Petterlee); 2, H. Hubbery (Petterlee); 3, Mr. and Miss Barsby (Hetton); 4, B. Black (Blackpool). Swordtails: 1 and 4, Mr. and Mrs. Jones (Welbeck); 2, Mr. and Mrs. Sowerby (M. Pleasant); 3, H. Hubbery (Petterlee). Mollys: 1, J. Laidler (Newcastle); 2 and 4, L. Leadbetter (Blackpool); 3, J. Bates (Petterlee). Small Barbs: 1, C. A. Enright (Houghton); 2, J. Bates (Petterlee); 3, J. Chamberlain (Hartlepool); 4, Mr. and Mrs. Buck (Hetton). Large Barbs: 1, S. Stephenson (Stanley); 2, L. Leadbetter (Blackpool); 3, Mr. and Mrs. Sowerby (M. Pleasant); 4, N. Watson (Hartlepool). Small Characins: 1, A. E. Richardson (Houghton); 2, I. Gardner (Washington); 3, Mr. and Mrs. Brown (Half-Moon, Billingham); 4, R. Smith (Independent). Large Characins: 1, I. Gardner (Washington); 2, R. Shanks (M. Pleasant); 3, S. Smith (Petterlee). Dwarf Cichlids: 1, C. A. Enright (Houghton); 2, H. Hubbard (Petterlee); 3 and 4, L. Leadbetter (Blackpool). Large Cichlids: 1 and 4, A. Bebbington (Petterlee); 2, J. D. Watson (Hartlepool); 3, C. Moist (Hetton). Rasboras and Danios: 1 and 2, W. Hall (Washington); 3, H. Hubbard (Petterlee); 4, Mr. and Mrs. Buck (Hetton). Shark and Labos: 1, M. Turnbull (Hetton); 2, G. Glesby (Welbeck); 3, H. Hubbard (Petterlee); 4, L. Leadbetter (Blackpool) and G. Glesby (Welbeck). Corydoras: 1 and 2, H. Hubbard (Petterlee); 3, Mr. and Mrs. Stephenson (Bishop Auckland); 4, J. Greenwell (Hetton). Catfish and Loach: 1, A. Bebbington (Petterlee); 2, S. Stephenson (Stanley); 3, Mr. and Mrs. Low (Cleveland); 4, W. Worral (Petterlee). A.V. Fighter: 1, G. Glesby (Welbeck); 2, Mr. and Mrs. Stephenson (Bishop Auckland); 3, S. Smith (Petterlee); 4, A. Bebbington (Petterlee). A.O.V. Labryush: 1, S. Smith (Petterlee); 2, R. Thompson (Independent); 3, L. Leadbetter (Blackpool); 4, G. Glesby (Welbeck). E.L.Y.C.: 1, I. Gardner (Washington); 2 and 3, J. A. Cutting (B.K.A.); 4, B. Cooper (Petterlee). A.V. Angel: 1 and 4, C. A. Enright (Houghton); 2, M. Muncaster (M. Pleasant); 3, L. Leadbetter (Blackpool). Breeding Pairs (Livebearers): J. D. Watson (Hartlepool); 2, L. Leadbetter (Blackpool); 3, G. Newbould (Welbeck); 4, Mr. and Mrs. Jones (Welbeck). Breeding Pairs (Egglayers): 1, J. D. Watson (Hartlepool); 2, B. Prytherch (Ashington); 3, M. Muncaster (M. Pleasant); 4, R. Shanks (M. Pleasant). Breeders (Livebearers): 1 and 4, Mr. and Mrs. Sowerby (M. Pleasant); 2, H. Hubbard (Petterlee); 3, J. W. Worral (Petterlee). Breeders (Egglayers): 1, B. Davison (Ashington); 2, L. Leadbetter (Blackpool); 3, P. Newton (Hartlepool); 4, Mr. and Mrs. Brown (Half-Moon, Billingham). A.V. Coldwater: 1, Miss T. Liddle (Ashington); 2, M. Turnbull (Hetton); 3, J. Cutting (South Shields). A.O.V. Tropical: 1, Mr. and Mrs. Liddle (Ashington); 2, L. Leadbetter (Blackpool); 3, I. Gardner (Washington); 4, W. Worral (Petterlee). Junior Section: 1, B. Black (Blackpool); 2, A. Jones (Welbeck); 3, D. Chamberlain (Hartlepool); 4, A. Jones (Welbeck). Best Fish in Show was won by J. D. Watson (Hartlepool). There were 276 entries and the prizes were presented by Mr. H. Bunker, J.P. The judges were J. Robertson, L. Drummond, R. Atherton and A. Bailey. The next meeting of Hetton County A.S. who are now the Aquatic section of Hetton Community Association Centre, is on Wednesday, 15th November, and will be a friendly table show challenge match against Stanley, Consett and District A.S., at 8 p.m. in the lounge of Hetton Community Centre. Anybody is welcome to come along and view the fish on show.

A RECORD total of 634 entries was received for the fifth annual open show of **Nuneston A.S.** The best fish in show was a flying fox belonging to Mr. G. B. Kieham, of Tamworth and district, and the society with the most entries was Bedworth A. and P.S. who also scored the most points. The individual with the most points was D. White, of Bedworth.

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Results: Fighters: 1 and 4, J. Underwood (SADG); 2, J. Goodman (Wombourne); 3, G. C. Brockhouse (Lower Gornal), A.O.V. Amantid: 1, Mr. and Mrs. K. Brooks (MTA); 2, R. Hargreaves (Goodyears End); 3, Mrs. Hunt (Hinkley); 4, W. Day (N. Staffs). Characins (Sec. A): 1, K. Pratt (Bedworth); 2, Mr. and Mrs. K. Brooks (MTA); 3, Mr. T. Davis (MTA); 4, Master D. Beard (SADG). Characins (Sec. B): 1, Attwood and Williams (Rubery Select); 2, Mr. and Mrs. Bird (SADG); 3, Mr. and Mrs. J. Gillett (Nuneaton); 4, Mrs. L. Ankers (N. Staffs.). Cichlid (Sec. A): 1 and 3, Mr. J. Goodman (Wombourne); 2, Mr. and Mrs. G. Greary (Hinkley); 4, R. North (Pelsall). Angels: 1, E. Sheehy (Coventry); 2, K. Ankers (N. Staffs.); 3 and 4, T. Hughes (SASS). A.O.V. Cichlids: 1, R. Trippas (MTA); 2, R. North (Pelsall); 3, E. Sheehy (Coventry); 4, T. Snow (N. Warwick). Barbs (Sec. A): 1, Mr. and Mrs. Hough (MTA); 2 and 3, L. B. Groustner (N. Warwick); 4, Miss J. Shelton (Rubery). A.O.V. Barbs: 1, S. Harwell (Hinkley); 2, D. White (Bedworth); 3, T. Davis (MTA); 4, A. Gregory (Haden). Catfish (Sec. A): 1, M. Bates (Haden); 2, Clarke Bros. (N. Staffs.); 3, J. Goodman (Wombourne); 4, J. Beard (SADG). A.O.V. Catfish: 1, T. Pugsley (Nuneaton); 2, A. Gregory (Haden); 3, Attwood and Williams (Rubery); 4, R. Goodson (Rochampton). Loaches: 1, G. and S. (Ind.); 2, K. Thomas (Lucas); 3, Clarke Bros. (N. Staffs.); 4, R. Goodson (Rochampton). A.V. Swordtail: 1 and 2, D. White (Bedworth); 3 and 4, J. and L. Smith (Ind.). Platies: 1, Mrs. D. Cruickshank (Ealing); 2, Mr. and Mrs. Hough (MTA); 3 and 4, Attwood and Williams (Rubery). Mollies: 1 and 2, P. Moye (Blechley); 3 and 4, G. and S. (Ind.). Guppies: 1, J. Beard (SADG); 2, 3 and 4, Mr. and Mrs. K. Brooks (MTA). A.O.V. Livebearer: 1, R. Hargreaves (Goodyears End); 2, D. White (Bedworth); 3, J. Goodman (Wombourne); 4, Mrs. D. Cruickshank (Ealing). Livebearer (Paris): 1, B. and F. Hurst (Coventry); 2 and 3, Mr. and Mrs. Lee (Bedworth); 4, Mr. and Mrs. Brooks (MTA). Egglayer (Pairs): 1, Mr. Whitfield (Rubery); 2, G. and S. Noble (Chelmsley); 3, Mr. and Mrs. Brooks (MTA); 4, Mr. T. Cruickshank (Ealing). Rasboras: 1, Mr. Richardson (Loughborough); 2, Mr. D. Barnett (Leicester FK); 3, Mr. and Mrs. Cox (Nuneaton); 4, Mr. M. Bates (Haden). Danios and W.C.M.M.: 1, 2 and 3, E. Williams (Chelmsley); 4, D. Barnett (Leicester FK). Killies: 1, B. Hughes (Stone); 2, Mr. and Mrs. S. Hall (Nuneaton); 3, B. and F. Hurst (Coventry); 4, G. Noble (Chelmsley). A.O.V. Tropical: 1, Mr. C. Kirkham (Tamworth and District); 2, Mr. and Mrs. A. Jeffs (Nuneaton); 3, R. Goodson (Rochampton); 4, Mr. T. Pugsley (Nuneaton). Junior Egglayer: 1, Master Ankers (N. Staffs.); 2, Master C. Pratt (Bedworth); 3, G. C. Brockhouse (Lower Gornal); 4, N. Furness (Rubery). Junior Livebearer: 1, Miss J. Shelton (Rubery); 2, Master C. Pratt (Bedworth); 3, Adrian Berry (Nuneaton); 4, Master R. Shakespeare. Breeders Egglayer: 1, Mr. R. Trippas (MTA); 2, Mr. and Mrs. Freeman (Leicester FK); 3, R. Hargreaves (Goodyears End); 4, K. Bateh (N. Staffs.). Breeders Livebearer: 1, D. White (Bedworth); 2, B. and F. Hurst (Coventry); 3 and 4, M. Hughes (SASS). A.V. Plant: 1 and 2, Mrs. C. Beard (SADG); 3, Miss S. Hartwell (Hinkley); 4, J. Goodman (Wombourne). Pedigree Single Tail Goldfish: 1, R. Scally (Bedworth); 2 and 4, D. Basingwood (Coventry); 3, F. Watts (Coventry). Pedigree Twin Tailed Goldfish: 1, Mr. and Mrs. Balcombe (Bedworth); 2, Mr. and Mrs. A. Jeffs (Nuneaton); 3, R. and B. Commander (Tamworth Killie); 4, Mr. and Mrs. Hough (MTA). A.O.V. Goldfish: 1, Mr. R. Shakespeare (Bedworth); 2 and 4, G. and S. (Ind.); 3, Shelton and Mayer (Atherstone). Pond and River Fish: 1, J. Salisbury (Bedworth); 2, Shelton and Mayer (Atherstone); 3, Clarke Bros. (N. Staffs.); 4, Mr. and Mrs. Hough. Furnished Jars: 1 and 4, D. White (Bedworth); 2, Mr. and Mrs. G. Ward (Nuneaton); 3, Mrs. Crook (Nuneaton).

THE Bethnal Green A.S. held a very successful open show in September. A film by

Jacques Cousteau was shown in the afternoon and was well attended and enjoyed. F.B.A.S. Judges were Messrs. E. Nicoll, K. Nutt, H. Towell, B. Baker, P. Ginger and R. Eason. The inter-club trophy was won by Southend Leigh and District A.S. Best fish in show was won by J. Batts, of Ealing A.S. F.B.A.S. Championship trophy class "G" male guppy was won by A. P. Taylor, of Sudbury A.S. Detailed results were as follows: Class Aa: 1 and 2, United A.S.; 3, Bethnal Green A.S.; 4, Leytonstone A.S. Class B: 1, Mrs. R. Coyle; 2, B. Funnell; 3, S. Mason; 4, A. J. Day. Class C: 1 and 3, J. E. Connolly; 2, Mrs. S. Hedges; 4, Mrs. M. Nethersell. Class Ca: 1, Mrs. M. Nethersell; 2, J. H. Jackson; 3, D. Adams; 4, R. Hall. Class D: 1, J. Batts; 2, K. Adams; 3, D. Bewick; 4, V. Valley. Class Db: 1, B. Funnell; 2, S. Mason; 3 and 4, A. J. Day. Class E: 1, Mrs. S. Hedges; 2, Mr. P. Coyle; 3, R. Hall; 4, P. D. Elson. Class Ea: 1, F. Gardner; 2, R. A. Ott; 3 and 4, A. P. Taylor. Class Eb: 1, J. Martin; 2, J. Batts; 3, D. Adams; 4, J. E. Connolly. Class F: 1, E. J. Hurley; 2, K. Appleyard; 3, R. Cooper; 4, P. Cottle. Class G: 1, Mrs. P. Lambourne; 2, B. L. Wright; 3, D. Lambourne; 4, P. Arnold. Class H: 1, Mrs. M. Nethersell; 2, W. F. Sutton; 3, J. E. Connolly; 4, P. Gardner. Class J: 1, J. Howe; 2, S. Mason; 3, K. Adams; 4, P. Arnold. Class K: 1 and 4, D. C. M. Durrant; 2, J. London; 3, F. Gardner. Class L: 1, J. Martin; 2, P. W. Arnold; 3, J. Batts; 4, Mrs. M. Nethersell. Class M: 1 and 2, Mrs. S. Hedges; 3, D. Bewick; 4, P. W. Arnold. Class N: 1, J. Batts; 2, Mrs. P. Lambourne; 3 and 4, D. Adams. Class O: 1, A. P. Taylor; 2 and 3, T. Cruickshank; 4, D. C. M. Durrant. Class P: 1, A. P. Taylor; 2, R. A. Ott; 3, Mr. and Mrs. Burlton; 4, A. J. Day. Class Q: 1, P. Coyle; 2 and 4, S. Mason; 3, K. Adams. Class R: 1, J. Batts; 2, Mrs. D. Cruickshank; 3, C. Wood; 4, P. O'Bryan. Class S: 1 and 2, Mrs. M. Nethersell; 3, R. Newman; 4, B. Funnell. Class T: 1, Mrs. B. Cowell; 2, P. Gottle; 3, Mrs. D. Cruickshank; 4, R. Harris. Class U: 1 and 4, K. Adams; 2 and 3, Mrs. S. Hedges. Class V: 1, K. Adams. Class W: 1, 2 and 3, Mrs. S. Hedges; 4, Mr. Pinder. Class X: A, J. Day; 1, R. Newman; 2, D. Lambourne; 3, A. J. Day; 4, R. A. Ott. Class X-O-T: 1, T. Gillman; 2, A. J. Day; 3, P. W. Gottle; 4, R. J. Johnston. Class Z: 1, Mrs. S. Hedges; 2, R. Newman; 3, D. C. M. Durrant; 4, J. Hughes. Junior Tropical: 1, Miss T. Hedges; 2, Miss R. Coyle; 3 and 4, Master S. Adams.

AT their first meeting after the summer recess, Brentwood A.S. had an auction of fish donated by their chairman, M. Foley, who has unfortunately found it necessary to retire from the forefront of the club and the chairmanship. At the second meeting of the month a lecture given by Mr. Tomkins on diseases was enjoyed by the members. This was a most informative evening. Mr. Tomkins also answered a number of the members' questions and helped to solve many of their problems. There are still vacancies for a few members. Phone Upminster 27555 for details of the next meeting. Table Show results were as follows: Labyrinths: 1, 1, and K. Quarmby; 2, K. Canham; 3, L. Dwight; 4, R. Wrigard. Rasboras: 1, P. White; 2, 1, and K. Quarmby; 3, Mrs. M. Taylor; 4, L. Dwight.

THE first meeting of the Aberdeen A.S. after the summer recess proved to be very informative. Talks were given by A. Keir on breeding Tiger Harb and by G. Rose on breeding Angels, and these were very interesting and enjoyable. The evening's Dwarf Cichlid was won by D. Morgan (Single Dwarf Cichlid), L. Reid (Egglayer Single A.V.) and S. McCall (Livebearer Single A.V.). The next meeting will be held in the Y.M.C.A. Rooms, Union Street, Aberdeen, on the 21st November at 7.30 p.m. Subject for the evening will be a talk by B. Cooper on "Electricity in the Aquarium." The Table Show will be Egglayer A.V., Catfish A.V. and Single Plant.

RESULTS of the West Cumberland A.C. Open Show: Best in Show: B. Booker (Morecambe Bay). Best Tropical: B. Booker (Morecambe Bay). Best Coldwater: J. S. Hall (Aireborough). Coldwater: 1, 2 and 3, J. S. Hall (Aireborough); 4, G. Scott (West Cumberland). Platys: 1, 2, 3 and 4, B. Black (Blackpool). Swords: 1, R. Leckie (West Cumberland); 2, G. Burton (Borner); 3, L. Leadbetter (Blackpool); 4, A. Hunt (Borner). Mollies: 1, 2 and 4, L. Leadbetter (Blackpool); 3, A. Hunt (Borner). Guppies: 1, 2 and 4, L. Leadbetter (Blackpool); 3, Mr. and Mrs. Jones (Borner). Dwarf Cichlids: 1 and 3, L. Leadbetter (Blackpool); 2, G. Scott (West Cumberland); 4, Mr. and Mrs. Jones (Borner). A.O.V. Cichlids: 1, D. and K. Stenden (Loyne); 2, W. Riddle (West Cumberland); 3, B. Wilson (West Cumberland); 4, L. Leadbetter (Blackpool). Small Barbs: 1, R. Strand (West Cumberland); 2, W. Frain (West Cumberland); 3, B. Black (Blackpool); 4, L. Leadbetter (Blackpool). A.O.V. Barbs: 1, 2 and 4, L. Sharp (West Cumberland); 3, B. H. Bray (West Cumberland). Small Characins: 1, B. H. Bray (West Cumberland); 2, I. T. Powley (Borner); 3, E. Hodgson (Borner); 4, G. Burton (Borner). A.O.V. Characins: 1, B. and B. Booker (Morecambe Bay); 2 and 4, D. and R. Stenden (Loyne); 3, R. Walter (Morecambe Bay). Sharks, Flying Foxes: 1, W. Riddle (West Cumberland); 2, L. Leadbetter (Blackpool); 3, Mr. and Mrs. Jones (Borner); 4, R. Mitchell (West Cumberland). Rasboras, Danios and Minnows: 1, 2 and 3, R. Strand (West Cumberland); 4, J. Parker (West Cumberland). Catfish: 1, G. Scott (West Cumberland); 2, E. Hodgson (Borner); 3, J. Collier (Borner); 4, Mr. Proves (Independent). Loaches: 1, I. T. Powley (Borner); 2, G. Burton (Borner); 3, R. K. Wylie (Morecambe Bay); 4, R. Walker (Morecambe Bay). Amantids: 1, J. S. Hall (Aireborough); 2, G. Frewell (West Cumberland); 3, L. Sharp (West Cumberland); 4, G. Scott (West Cumberland). A.O.V.: 1, B. Booker (Morecambe Bay); 2 and 4, G. Burton (Borner); 3, J. S. Hall (Aireborough). Livebearers: 1, 2 and 4, L. Leadbetter (Blackpool); 3, J. S. Hall (Aireborough). Pairs (Egglayers): R. Strand (West Cumberland); 2 and 3, R. Mitchell (West Cumberland); 4, J. S. Hall (Aireborough). Livebearers: 1, W. Frain (West Cumberland); 2, J. Parker (West Cumberland); 3 and 4, L. Leadbetter (Blackpool). Egglayers: 1, L. Leadbetter (Blackpool); 2, W. Riddle (West Cumberland); 4, R. Leckie (West Cumberland). Novelty Mini Jars (West Cumberland only): 1, J. Parker; 2 and 3, M. Martin; 4, A. Kemmen. West Cumberland member with most points: R. Strand—Texaco Cup.

RECENTLY Amersham and District A.S. visited Interpet at Dorking, where they were made very welcome by Mr. Carrington, who showed the visitors around the new factory and his fish house. The Society has also had a talk by Mr. Sellick of the House of Fishes on cichlids from the lakes of Africa. He also brought along his own colour slides. In the very near future a talk on Killies by Mr. Armstrong is expected, and also some hints on how to photograph fish by Mr. Coppitt. There is also a three-way match against Boreham Wood and Hemel Hempstead to be contested shortly.

AT the September meeting of the Welbeck A.S., Castleford, there was a good attendance when Gordon Holmes gave a very enjoyable and interesting slide show and lecture on his visit to Large Breeders fish farms in Singapore.

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The monthly Table Show results were as follows: Sharks and Foxes: 1, P. Baker; 2, G. Townsend; 3, M. Baker. Carps and Minnows: 1, W. Hodgson; 2, W. Edwards; 3, A. Barrett. Breeders: 1, G. Newbold; 2, M. Baker; 3, A. Barrett. Meetings are held on the third Wednesday in each month at the British Legion Club, Welbeck Street, Catterford, at 7.30 p.m. Old and new members are assured of a warm welcome.

MEMBERS of the Southend, Leigh and District A.S. recently held an interesting talk by P. Tomkins on diseases and cures, which was well received by club members present. Table Show results: Mollies: 1, D. Little, Jr.; 2, J. Pilgrim. A.O.S. Tropicals: 1, Mr. and Mrs. Burfion; 2, S. Cool. At the second monthly meeting there was a quiz run by Mr. and Mrs. L. Mitchell. The Table Show results were as follows: Breeders (Livebearers): 1, S. Wood, Jr.; 2, C. Chewright. Breeders (Egglayers): 1, P. Capon; 2, C. Chewright.

THE Independent A.S. has had a very good year in respect of the N.W.L.G.A.S., and so far has won five of the six shows that have been held. In the last show they took the first prize in all four classes and also Best Fish in Show, which was won by Mrs. S. Mason. The Independent's next open show will be held on the 4th April, 1973. Further details will be given later.

THE Village A.S. held their first meeting in September at Bramhall Village Club. Apart from the business necessary for a first meeting, the members present (about 25) watched and discussed several very interesting microscope slides projected on to a screen. Daphnia a foot across looks very interesting and caused much lively discussion. The meeting closed with a sale of live food and plants.

RESULTS of the Table Show at the inter-club meeting between Stockton A.S. and Billingham Half Moon A.S. were as follows: Livebearers: 1, P. McGee (Billingham); 2 and 4, K. Greenley (Billingham); 3, G. Lee (Stockton). Egglayers: 1, H. Fescock (Stockton); 2, G. Lee (Stockton); 3, Mr. and Mrs. Blackwell (Billingham); 4, R. Walker (Stockton). At the second meeting in September, J. Robertson gave an interesting talk and demonstration on furnished jars. The Table Show results were: Sharks, Loaches and Bots: 1, K. Greenley; 2, T. Cook; 3, J. Waller. A.O.V. Catfish: 1 and 2, K. Greenley; 3, A. Saunders; 4, L. Osman.

OFFICERS elected at the annual general meeting of the **Middleton and District A.S.** for the forthcoming year are as follows: Chairman, A. Wilkes; vice-chairman and show secretary, R. Forsyth; secretary, E. Ward; treasurer, J. Wilkes; committee, Mrs. M. Ward, Miss G. Andrew, Mrs. K. Nuttall and K. Smith. The new secretary's address is: 2 St. Martin Street, Catterton, Rochdale. During the meeting an L.P. record was presented to Miss Gillian Andrew in recognition of her fund-raising activities on behalf of the club.

OPEN SHOW results of the **Brighton and Southern A.S.** were as follows: Individual

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Furnished Aquaria: 1, B. Salisbury; 2, June Salisbury; 3, Mr. Watts; 4, H. Maddison. Barbs: 1, Mrs. J. Shead; 2, H. Maddison; 3, R. Isley; 4, L. Alchin. Characins: 1, P. Coyle; 2, J. D. Wilson; 3, D. Soper; 4, H. Maddison. Hyphessobrycon, Hemigrammus and Cheilodons: 1, T. Taylor; 2, R. Bowes; 3, D. Soper; 4, R. Smithers. Cichlids: 1, J. Barker; 2 and 3, Mr. and Mrs. Corbin. Apistogramma Palmatochromis and Nannacara: 1 and 2, J. W. Blackwell; 3, H. Maddison; 4, Mrs. A. M. Adams. Haplochromis Derivatives: 1 and 2, D. Haines; 3, Mr. and Mrs. J. Burdies; 4, L. J. Thorp. Labryrinths: 1, Mrs. J. Shead; 2, J. W. Blackwell; 3, R. Horsey; 4, H. Maddison. Beta Splendens: 1 and 2, R. Bowes; 3, J. Freemantle; 4, K. Ross. Egg-laying Toothcarps: 1 and 3, J. Chambers; 2, T. B. Joseph; 4, B. Pettin. Tropical Catfish: 1, K. Joseph; 2, C. W. Joyce; 3, Mr. and Mrs. Corbin; 4, D. Soper. Corydoras and Brochis: 1, R. Bowes; 2, D. Haines; 3, P. Bates; 4, Mrs. A. M. Adams. Rasboras: 1, P. Stapley; 2, H. Maddison; 3, D. Soper; 4, T. Taylor. Danos and W.C.M.M.: 1 and 4, R. G. Rice; 2 and 3, R. Bowes. A.O.S. Tropical Egglayer (F.B.A.S. Championship Trophy): 1, R. Isley; 2 and 4, Mrs. S. Hodges; 3, A. M. Kinsey. Swordtails: 1, P. Coyle; 2, D. Haines; 3, A. J. Mepham; 4, J. Smith. Platys: 1, R. Bowes; 2 and 3, A. J. Mepham; 4, J. D. Wilson. Molly: 1 and 2, J. D. Wilson; 3, A. J. Mepham; 4, R. Bowes. A.O.S. Livebearers: 4, Mr. and Mrs. Fagan; 2, A. J. Mepham; 3, J. W. Blackwell; 4, R. Isley. Tropical Egglayers (Brooders): 1, 2 and 3, Mr. and Mrs. Fagan; 4, Anthony Brooks. Tropical Livebearers (Brooders): 1, J. W. Blackwell; 2 and 4, A. Dawes; 3, D. Soper. Common Goldfish and London Shubunkins: 1, V. P. Voysey; 2, K. Whiting; 3, J. D. Wilson; 4, Mrs. P. L. Horsey. Singletails and Comets: 1 and 2, J. D. Wilson. Twin-tailed Goldfish: V. B. Hunt. A.O.S. Coldwater: 1 and 2, V. B. Hunt; 3, V. P. Voysey; 4, E. Binstead. Best Single Guppy: Mr. and Mrs. Brock. Best Opposite Sex Guppy: D. Soper. Best Breeder's Teams of Guppies: Mr. and Mrs. Brock. Judges, F.B.A.S.: R. Eason, B. Baker, D. Hancock, P. Ginger, H. Towell, H. Armitage, P.G.A. Judge: R. Elmes. Best Fish in Show, Orange Chromide owned by S. Freemantle of Gosport.

THE Wrexham T.F.S. members had a most enjoyable evening when they welcomed 43 guests at their Open Night in September, at which help and advice were given on fishkeeping. Guests were given an insight into club activities in general and on view were fish in a Table Show plus the club's library and trophies. A lecture by W. L. Whittier, P.Z.S., of Canada, on Tank Maintenance, was followed by a few slides shown of tanks and fish taken by members.

FROM Bristol A.S. Naming the Angel as his favourite fish, E. Newman said his choice was influenced by their intelligence and parental care. Answering a further question from Bristol A.S., the speaker claimed that three drops of a five per cent Acriflavine solution in twelve gallons of water for three or four days was effective against gill flukes.

IN September, the **Dunsmow and District A.S.** held an inter-club Table Show and Quiz, with Haverhill A.S. The quiz was won by Dunsmow and the table show was won also by Dunsmow with 1,090 points against Haverhill who scored 973 points. The individual winners were as follows: 1, 2 and 3, Mrs. E. Andrews (Dunsmow); 4, Mrs. W. Smith (Dunsmow). The judge was J. Yates, F.B.A.S., of Cambridge.

OFFICERS for the **Swillington A.S.** are now as follows: President, R. Hislop; vice-president, D. Stead; secretary, R. Hislop; treasurer, R. Stringer; show secretary, P. Reynolds; social secretary, Mrs. A. Hislop; committee: G. Binks, S. Caslake, J. Caslake, P. Reynolds; P. Flint.

RESULTS of Y.A.D.A.S. annual Open Show were as follows: Best Fish in Show: T. M.

Fowler (Bath). Highest Number of Points: Master Nigel Gray (Independent). Best Junior Number of Points: Master Nigel Gray (Independent). Guppies (Male): 1, P. A. Lewis (B.T.F.H.); 2, 3 and 4, A. Heels (Bishops Cleeve). Guppies (Female): 1, Miss V. Pees (Bath); 2, D. Walsh (Yate). Swordtails: 1 and 3, R. Lawrence (B.T.F.C.); 2, T. Hayward (Yate); 4, J. Roberts (B.T.F.C.). Mollies: 1 and 2, Master Nigel Gray (Independent); 3, P. Greenwood (Bishops Cleeve); 4, Mrs. B. Pederson (B.T.F.C.). Platys: 1, 2, 3 and 4, Mrs. W. Short (Bath). Barbs: 1, P. Roswell (Bath); 2, Master Nigel Gray (Independent); 3, A. J. Hilliard (Bath); 4, D. Trembler (B.T.F.C.). Barbs, A.O.V.: 1, T. Fowler (Bath); 2, Master Nigel Gray (Independent); 3 and 4, C. Turner (Cardiff). Danos, Rasboras and Minnows: 1, D. Walsh (Yate); 2, R. Hyett (Yate); 3, P. G. Sutherland (Cardiff); 4, C. Webb (Yate). Characins, H. and H.: 1 and 2, R. Dawes (Cardiff); 3, B. Walter (Yate). 4, F. Roswell (Bath). Characins, A.O.V.: 1, S. Green (Yate); 2, Master Nigel Gray (Independent); 3, R. Hyett (Yate); 4, Mrs. K. Martin (Independent). Anabantids: 1, P. G. Sutherland (Cardiff); 2, R. Lawrence (B.T.F.C.); 3, P. Roswell (Bath); 4, S. Green (Yate). Siamese Fighters: 1, F. G. Sutherland (Cardiff); 2, 3 and 4, T. Hampshire (Yate). Angels: 1, P. Greenwood (Bishops Cleeve); 2, Master Nigel Gray (Independent); 3 and 4, T. Hampshire (Yate). Cichlids, A.O.V.: 1 and 3, R. Dawes (Cardiff); 2 and 4, S. Green (Yate). Dwarf Cichlids: 1, R. Hyett (Yate); 2, R. A. Bennett (Yate); 3, C. Webb (Yate); 4, Master Nigel Gray (Independent). Corydoras and Brochis: 1, P. A. Lewis (B.T.F.C.); 2, T. Hampshire (Yate); 3, C. Scripps (Bishops Cleeve); 4, T. Fowler (Bath). Catfish, A.O.V.: 1 and 4, R. Lawrence (B.T.F.C.); 2, T. Fowler (Bath); 3, S. Green (Yate). Loaches, Eels and Botias: 1, F. Buckingham (Cardiff); 2, A. J. Hilliard (Bath); 3, T. Hampshire (Yate); 4, Master Nigel Gray (Independent). A.V. Seated Pairs: 1 and 3, R. Hyett (Yate); 2, S. Green (Yate); 4, C. Stickland (Yate). Breeders (Livebearers): 1, C. Turner (Cardiff); 2, Mrs. K. Martin (Independent); 3, T. Hayward (Yate); 4, M. Ridge (Yate). Breeders (Egglayers): 1, C. Turner (Cardiff); 2 and 3, Mrs. K. Martin (Independent); 4, R. Hyett (Yate). Killifish: 1, 2 and 4, G. Churchill (Yate); 3, M. Traves (Yate). A.O.V. Tropical Fish: 1, A. J. Hilliard (Bath); 2, D. Walsh (Yate); 3, R. Lawrence (B.T.F.C.); 4, Master Nigel Gray (Independent). Goldfish: 1, Mrs. K. Press (Bath); 2, T. Hampshire (Yate); 3, J. Powell (Yate); 4, Mr. T. Menham (Southampton). Shubunkins and Fancy Goldfish: 1 and 4, R. J. Bennett (Independent); 2, G. Press (Bath); 3, R. Sweet (Independent). A.V. Pond and River Fish: 1, P. A. Lewis (B.T.F.C.); 2, 3 and 4, J. Powell (Yate). Junior A.O.V.: 1, Miss J. Press (Bath); 2 and 3, Master Nigel Gray (Independent); 4, Master B. Short (Bath). Rift Valley Cichlids: 1, B. Snell (Yate); 2, R. Dawes (Cardiff); 3, A. Gilbert (Independent); 4, Mrs. B. Pederson (B.T.F.C.). Furnished Jars: 1, G. Miles (Bristol Aero); 2, R. Roswell (Bath); 3, Mrs. K. Press (Bath); 4, R. Dawes (Cardiff). A.V. Rooted Tropical Plant: 1, M. Ridge (Yate); 2 and 3, J. Powell (Yate).

THE committee of **SPASS** sadly record the passing of Mr. R. Dudley, chairman and founder of the club. His presence and leadership will be sadly missed. At a recent committee meeting it was decided to ask D. J. Pearson to act as caretaker chairman until the annual general meeting in January. At the same meeting, the resignation of F. Gynn, the treasurer, was regrettably accepted as he will shortly be moving away, and R. Trim has been asked to act as caretaker treasurer, again until the annual general meeting. The club night has been changed to the third Tuesday in the month, at the St. Mark's Hall, Compton Road, S.W.19, at 8 p.m., where new members and visitors will be cordially welcomed.

THE fourth annual Open Show of the **Torbay A.S.** was held in September. The judges were, Messrs. H. Coombes, C. W. Corwell, R. Matley, W. T. Ryder, J. Stillwell and F. Tonkins. There were approximately five

THE AQUARIST

Woolley (Harlow); 3, Mr. and Mrs. Keen (Bury); 4, R. Lugmayer (Leptonstone). A.O.S. Egg-layers: 1 and 2, Mrs. S. Hodges (B. Green); 3, D. Adams (B. Green); 4, Mrs. J. Murdoch (Harlow). Pairs Egg-layers: 1 and 2, D. Adams (B. Green); 3, D. Wright (Harlow); 4, W. Matthews (Harlow). Pairs Livebearers: 1, R. Kerridge (Harlow); 2, Mrs. L. Murdoch (Harlow); 3, R. Goddard (Harlow); 4, J. Bennett (Harlow). Guppy (Male): 1, Miss R. Quennell (East Dulwich); 2, T. Wooley (Harlow); 3 and 4, B. Goddard (Harlow). Guppy (Female): 1, P. Coyle (Ind.); 2, Mr. and Mrs. Burton (S.L.A.D.A.S.); 3, R. Ott (Haverhill); 4, Mrs. I. Murdoch (Harlow). Sword-tails: 1, Mr. and Mrs. Burton (S.L.A.D.A.S.); 2, Mr. and Mrs. Keen (Bury); 3, J. Bonnet (Harlow); 4, R. Kerridge (Harlow). Platies: 1, W. Goodwin (B.K.A.); 2, R. Bowses (Ind.); 3, R. Orford (S.L.A.D.A.S.); 4, Mr. and Mrs. Keen (Bury). Mollies: 1 and 2, P. Moyes (Bletchley); 3 and 4, R. Kerridge (Harlow). A.O.S. Livebearer: 1, S. Cowell (Unltd.); 2, R. Bowses (Ind.); 3, K. Quennell (East Dulwich); 4, R. Lugmayer (Leptonstone). Breeders (Egg-layers): 1, D. Calver (Bedford); 2, W. Matthews (Harlow); 3, D. McMurdus (Dunmow); 4, R. Ott (Haverhill). Breeders (Livebearers): 1, J. Lambert (Harlow); 2, R. Orford (S.L.A.D.A.S.); 3, T. Guest (Dunmow); 4, Mrs. M. Quennell (East Dulwich). Best in Show was W. E. Goodwin (B.K.A.) and there were nearly 400 entries. F.B.A.S. trophy for Individual Furnished was won by Mrs. J. Salisbury (Harlow).

WINNERS of the table show for Barbs at the September meeting of Banbury A.S. were: 1, 3 and 5, C. Sykes; 2, P. Hill; 4, L. Poole. T. Cooper gave a very informative talk on electricity and safety with electricians in the aquarium.

At the second meeting of the month there was a very interesting tape-slide show on Tropical Community Fish from the Brighton and Southern Aquarists Society. At the Northampton Open Show fourteen fish were entered by members of the B.D.A.S. and awards were as follows: E. Holmes, one first, two seconds and one fourth. P. Hill, one third. I. Ward, one first and one fourth.

IN the Special Open Awards at the Bristol A.S. Open Show, R. J. King took the Mabel Davis Trophy for the Best Exhibit in the Show and the Eric Butler Cup for the Best Coldwater Fish with a magnificent Veiltail.

The B.T. Shield for the Second Best Coldwater fish was taken by A. E. Roberts with a Bristol Shubunkin. Mr. Roberts also took the Denman Cup for the highest number of points in the show. An Apistogramma ramirezi won the Lewis Cup for the best tropical fish for R. C. Hyett and the H. J. Shepherd Cup for the best egg-layer, N. Gray with a Golden Sailfin Mollie, took the Percy Gibbs Cup for the best livebearer. Results: Goldfish: 1, T. Hampshire, 2, 3 and 4, W. Ham, 35 entries. Bristol Shubunkins 3 ins.: 1, H. J. Whiting; 2, H. T. Jago; 3, Miss C. Ruppert; 4, J. Phillips. Bristol Shubunkins 5 ins.: 1, A. E. Roberts; 2 and 3, D. S. Langdon; 4, R. J. Pinnock. Veiltails: 1, R. J. King;

2, S. Tibble; 3 and 4, A. E. Roberts. Mooses: 1 and 2, A. E. Roberts; 3, R. J. Bennett; 4, H. T. Jago. Telescopes, Lionheads, Celestials: 1, R. J. King; 2, D. Headford; 3, L. G. Emery. Orandas: 1 and 4, R. J. King; 2, A. E. Roberts; 3, D. Headford. Nymphs and Comets: 1 and 2, L. G. Emery; 3, D. Headford; 4, M. Barratt. Scaled Fantails: 1 and 2, V. Collins; 3, C. J. Cotterill. Galico Fantails: 1 and 2, F. Radford; 3, H. T. Jago; 4, S. Tibble. Koi, A.O.V. Pondfish: 1, V. Collins; 2, C. J. Cotterill; 3, P. Chudley; 4, R. M. Whittington. Beissol Shubunkins Breed '72: 1, H. J. Whiting; 2 and 4, R. Oxenham; 3, L. G. Emery. Mooses bred '72: 1, 2, 3, 4, A. E. Roberts. A.O.V. Fancy fish bred '72: 1, G. J. Bell; 2, R. J. King; 3, Mrs. A. F. Wicks; 4, S. Tibble. Breeders' Singletails: 1, 2, 3, 4, L. G. Emery. Breeders' Twintails: 1, Mrs. A. F. Wicks; 2, L. G. Emery; 3, S. Tibble; 4, A. E. Roberts. Bristol Shubunkins matched pairs: 1, H. J. Whiting; 2, D. S. Langdon; 3, W. G. Bryant. Novice Shubunkins: 1 and 4, P. Scott; 2, Miss C. Ruppert; 3, P. Chudley. Furnished Aquaria C.W.: 1, C. J. Cotterill. Aquatic Plants C.W.: 1 and 2, R. M. Whittington; 3 and 4, C. J. Cotterill. Aquatic Plants Tropical: 1 and 2, Miss H. Morgan; 3, D. J. Saphier; 4, D. Noble. Fighting Fish: 1, P. A. Lewis; 2 and 3, T. Hampshire; 4, A. Gilbert. Labyrinth: 1, D. Noble; 2 and 4, T. Hampshire; 3, N. Gray. Barbs: 1, R. C. Hyett; 2, N. Gray; 3, A. Gilbert; 4, D. Noble. Characins H. & H.: 1, R. K. Day; 2, W. Ham; 3, D. Noble; 4, A. Gilbert. A.O.V. Characins: 1, R. C. Hyett; 2 and 3, M. J. Howe; 4, J. Phillips. Cichlids: 1, R. C. Hyett; 2 and 3, D. Noble; 4, A. Gilbert. Angel Fish: 1, 2 and 4: T. Hampshire; 3, N. Gray. A.O.V. Egg-layers: 1 and 2, N. Gray; 3, D. Noble; 4, R. K. Day. Catfish: 1, D. Noble; 2, P. A. Lewis; 3 and 4, N. Gray. Guppies (Longtail): 1 and 2, P. A. Lewis; Guppies (Female): 1, 2, 3 and 4, H. H. Bell. Swordtails: 1, R. K. Day; 2, T. Hampshire. A.O.V. Livebearers: 1, 2, 3 and 4, N. Gray. Breeders' Egg-layers: 1, T. Hampshire; 2, D. J. Saphier; 3, R. C. Hyett; 4, G. Miles.

BRITISH CICHLID ASSOCIATION

The new B.C.A. membership secretary is Philip N. Berry of 131 Sherbrook Road, Daybrook, Notts. All enquiries should be accompanied by a stamped addressed envelope.

RECENT events in connection with the Manchester Section F.G.A. have included an excellent entry of 111 for the June Table Show, which was the highest for three years. The major awards went to J. Hesketh for the Best Female and Best in Show, J. Snowden for the Lancaster Section for the Best Male, and J. Hallett for the Best Breeders. A panel of experts gave some information on the selection of parent types. Unfortunately, some members were away on holiday for the July meeting, when the treasurer gave a very interesting talk and slide show on aquarium plants. The Table Show was supported by 62 entries, but quality was still high. Best in Show and Best Male awards went to the chairman, R. Young, with a Short Dorsal Veil. Best Female award went to A. Swain's Cofer Tail and the chairman's wife Peigi took the Best Breeder's award. Once again the August meeting was unfortunately affected with a great number of members away

on holiday. However, a good time was had by all those present with a quiz which was well devised by J. Hinchings from Lancaster. Best Breeders and Best in Show awards went to A. Charlton, Best Male award went to J. Hesketh and Best Female went to A. Swain. The September meeting saw a stronger gathering with P.G.A. members from Lancaster and Birmingham. The main point of the meeting was a tape and slide lecture sent up from Birmingham by M. Delingpole, as he was unable to attend in person. The show, entitled "Guppy U.K. 1970," included photographs of standard outlines and fish corresponding to them, and was very well received. The major awards for the Table Show were: Best in Show and Best Female, I. Peck's Superba. Best Male, J. Peck's Fantail, and Best Breeders, D. Glenn's Pairs. Anyone interested in breeding Guppies is invited to come to a meeting at the Longlight Hotel, Bear entrance to Belle Vue, Manchester, on the first Sunday of every month, at 2.30 p.m.

THE Wellingborough and District A.S. Open Show results were: Class B: 1 and 2, E. R. Bird (S.P.A.D.G.); 3, A. Blake (Basingstoke). Class C: 1, D. Barnett (Leics. Fishkeepers); 2, E. R. Bird (S.P.A.D.G.); 3, Mrs. B. Oakley (Dunstable). Class D: 1, May Netherell (Riverside); 2, G. & S.; 3, Mrs. B. Oakley (Dunstable). Class Da: 1, May Netherell (Riverside); 2, Phyl Flint (Wellingborough); 3, Mr. Eastbury (Leamington). Class Db: 1, W. Hickman; 2 and 3, F. Vicker (E.L.A.P.A.). Class E: 1, J. Phillips (Wellingborough); 2 and 3, F. Underwood (S.P.A.D.G.). Class F: 1 and 2, D. Calver (Bedford); 3, F. Underwood (S.P.A.D.G.). Class G: 1 and 3, E. R. Bird (S.P.A.D.G.); 2, R. Goodson (Rochampton). Class H: 1, V. Marsh (Ealing); 2, F. Marsh (Ealing); 3, May Netherell (Riverside). Class J: 1, Paul Willis (Wellingborough); 2, D. Barnett (Leics. Fishkeepers); 3, D. Page (Corby). Class K: 1, L. R. Barker; 2, P. A. Moye (Bletchley); 3, May Netherell (Riverside). Class L: 1, R. Goodson (Rochampton); 2, F. Underwood (S.P.A.D.G.); 3, May Netherell (Riverside). Class M: 1, R. Goodson (Rochampton); 2, Mr. and Mrs. Rossitor (Wellingborough); 3, P. Hunt (Thetford). Class N: 1, Mrs. V. Marsh (Ealing); 2, F. Marsh (Ealing); 3, D. H. White (Bedworth). Class O: 1, P. Marsh (Ealing); 2, E. A. Holmes (Banbury); 3, Mr. and Mrs. Shipman (Grantham). Class R: 1, Mrs. Cruickshank (Ealing); 2, P. A. Moye (Bletchley); 3, C. Pratt (Bedworth). Class S: 1, P. A. Moye (Bletchley); 2, May Netherell (Riverside); 3, G. & S. Class T: 1, Mrs. Cruickshank (Ealing); 2 and 3, D. H. White (Bedworth). Class U: 1, P. E. Watts (C.P.A.A.S.); 2 and 3, G. & S. Class V: 1, A. Robinson (Northampton); 2, K. E. Cocker (Suffolk Aquarists). Class XBM: 1, M. Pearson (E.L.A.P.A.); 2, F. Vicker (E.L.A.P.A.); 3, J. Bos (E.L.A.P.A.). Class XOT: 1 and 3, D. H. White (Bedworth); 2, L. R. Baker (Romford). Judges: C. Brown, F. Tomkins, B. Baker, P. Ginger, H. Towell, B. Sargent. F.B.A.S. Trophy Class B won by A. Blake (Basingstoke), with Phumino Barb.

AT the North Staffs. A.S. Open Show there were 445 entries from 25 different societies. The show also included two Siamese Fighters

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entered by Eric McQuade of Willowdale, Canada. Best Fish in the Show was a silver shark, owned by Mrs. H. Williams from Crewe. Full list of results: Class 1a: 1, J. E. Shore (Orram); 2, Mr. and Mrs. Parkins (Independent); 3 and 4, J. Lee (Independent). Class 1b: 1, Mr. and Mrs. Thorne (Northwich); 2, T. Hughes (S.S.A.S.); 3 and 4, G. C. Brockhouse (Lower Gornhill). Class 2a: 1, D. Cliffe (North Staffs.); 2, R. Harlow (Derby Regent); 3, R. Holmes (Derby Regent); 4, Mr. and Mrs. Jowle (Derby Regent). Class 2b: 1, Mrs. J. Carney (Cannock); 2, 3 and 4, W. Day (North Staffs.). Class 3a: 1 and 2, W. Hickman (Dudley); 3, M. Thomas (Lower Gornhill); 4, J. Gullane (Buxton). Class 3b: 1, A. Ankers (North Staffs.); 2, R. Harlow (Derby Regent); 3, P. Leese (Stone); 4, G. C. Brockhouse (Lower Gornhill). Class 3c: 1, J. S. Holdham (Independent); 2, Atwood & Williams (Rubery); 3 and 4, Clarke Bros. (North Staffs.). Class 4a: 1, Mrs. H. Williams (North Staffs.); 2, J. Lee (Independent); 3, A. Moss (Huddersfield); 4, R. Holmes (North Staffs.). Class 4b: 1, Mrs. L. Ankers (North Staffs.); 2, W. Hickman (Dudley); 3, Clarke Bros. (North Staffs.); 4, T. Roberts (North Staffs.). Class 5a: 1, K. Brunt (North Staffs.); 2, R. Holmes (Derby Regent); 3, Clarke Bros. (North Staffs.); 4, Atwood & Williams (Rubery). Class 5b: 1, J. Phillips (Whitechurch); 2, A. Millin (North Staffs.); 3, J. S. Booth (North Staffs.); 4, M. Thomas (Lower Gornhill). Class 6: 1, Clarke Bros. (North Staffs.); 2, C. Bates (North Staffs.); 3, Mr. and Mrs. B. Bailey (Sherwood); 4, P. Barnett (Independent). Class 7a: 1, K. Brunt (North Staffs.); 2, G. C. Brockhouse (Lower Gornhill); 3, G. Summersfield (North Staffs.); 4, W. Hickman (Dudley). Class 7b: 1 and 2, Atwood & Williams (Rubery); 3, Mr. and Mrs. Gabe (Chesterfield); 4, B. Coupland (Independent). Class 7c: 1, Master J. Bailey (Sherwood); 2, A. Morrey (Stone); 3, Atwood & Williams (Rubery); 4, P. Leese (Stone). Class 7d: 1, A. Millin (North Staffs.); 2 and 3, R. Mayer (North Staffs.); 4, J. Millin (North Staffs.). Class 7e: Mr. and Mrs. Thorne (Northwich). Class 8a: 1 and 3, P. Leese (Stone); 2, R. Mayer (North Staffs.); 4, A. Millin (North Staffs.). Class 9a: 1, A. H. Webb (North Staffs.); 2 and 4, Clarke Bros. (North Staffs.); 3, Mrs. H. Williams (North Staffs.). Class 10a: 1 and 3, K. Evans (Stone); 2, M. Thomas (Lower Gornhill); 4, K. Davies (North Staffs.). Class 10b: 1, W. Day (North Staffs.); 2, J. Gullane (Buxton); 3, J. Carney (Cannock); 4, Mrs. Bush (Market Drayton). Class 11a: 1 and 4, B. Hughes (Stone); 2 and 3, J. Lee (Independent). Class 12: 1, Mrs. H. Williams (North Staffs.); 2, K. Ankers (North Staffs.); 3, K. Brunt (North Staffs.); 4, D. Cliffe (North Staffs.). Class 13a: 2, J. Gullane (Buxton); 2 and 4, P. Barnett (Independent); 3, M. Clarke (North Staffs.). Class 13b: 1 and 2, A. Moss (Huddersfield); 3 and 4, M. Clarke (North Staffs.). Class 15a: 1, J. Gullane (Buxton); 2, J. W. Bower (Sherwood). Class 16a: 1, 2 and 3, E. C. Harris (Nelson). Class 17a: 1, Clarke Bros. (North Staffs.); 2 and 3, R. Mayer (North Staffs.).

THE results of the September show of the Dudley and District A.S. were as follows: Rabbits: 1, W. Hickman; 2, 3 and 4, J. Goodman. Rabbits: Novice: 1, S. Cartwright-Danilo and W.C.M.M.; 1 and 2, W. Hickman;

3 and 4, J. Goodman. Danio and W.C.M.M. (Novice): 1, L. Hatfield; 2, S. Cartwright-Charscins; 1, J. Croft; 2 and 3, W. Hickman; 4, J. Goodman. Charscins (Novice): 1 and 2, R. Shakespeare; 3, C. Hickman; 4, J. Millard. Best Fish in Show: J. Croft.

NEW SOCIETIES

Belper and District A.S. The inaugural meeting was held in September and the initial response was very encouraging. New members are welcome and full details can be obtained from G. Dean, 3, Winster Close, Belper, Derby DE5 111W or by phoning H. Gascoyne, Belper 3071.

Village A.S. Meetings held every 2nd Tuesday of the month at Bramhall Village Club, Melbourn Road, Bramhall, Cheshire. Secretary: S. A. Heap, 108 Aldwyn Crescent, Hazel Grove, Cheshire.

Lewisham and District A.S. Meetings are held on Mondays every fortnight. Temporary headquarters are at "The Green Man," Bromley Road, Catford. Chairman: Mr. Wells. Secretary: A. Jamieson, 69 Hook Lane, Welling, Kent DA16 2DW.

SECRETARY CHANGES

Goole and District A.S.: R. Holt, 63 Kent Road, Goole.

Gloucester A.S.: S. E. Norman, 75 Lavington Drive, Longlevens, Gloucester.

Middleton and District A.S.: E. Ward, 2 St. Martin Street, Castleton, Rochdale.

North Staffs. A.S.: K. Ankers, 4 Castle Street, Chesterton. Tel: 739-56409.

Aberdeen A.S.: Graeme Ross, 1 Gairnahel Place, Aberdeen AB2 5NB.

AQUARIST CALENDAR 1972

5th November: Mixenden T.F.S. Open Show at the Mixenden Community Centre, Clough Lane, Mixenden, Halifax, Yorkshire. Further information from the Secretary, S. Leedham, 74 Clough Lane, Mixenden, Halifax.

12th November: Midlands Aquarist League. Final Show at Friary Youth Centre, Nuneaton.

12th November: Creswell and District first Annual Open Show to be held at Workop Sports Centre, Valley Road, Workop. Schedules available from show secretary, Mrs. H. Blades, 13 Westminster Close, Workop, Notts. Tel: Workop 6563.

12th November: Hartlepool A.S. Open Show in the Longcar Hall, Seaton Carew. Schedules and details available from show secretary, J. D. Watson, 42 Sydenham Road, Hartlepool, Co. Durham, TS25 1PZ.

19th November: The Bradford and District A.S. are holding their 25th Anniversary Open Show at the East Bowling Unity Club, Leicester Street, Wakefield Road, Bradford. Show

Schedules from Mr. E. J. Brown, 8 Garden Field, Wyke, Bradford, Yorkshire.

25th November: Annual Fair, Feather and Aquaria Show to be held in the King's Hall, Lower Clapton Road, E.5. The Aquaria Show will comprise two Inter-Club Furnished Aquaria Classes; an Individual Aquascaped class; and Individual Miniature Furnished Aquaria class; 22 Tropical fish classes; Six Coldwater fish classes and a Plants class. The Show Secretary will be Mr. Ron Kerridge, of Harlow, entries close on Monday, 13th November. Schedules are available from T. Doyle, London Borough of Hackney, Baths and Civic Recreation, 39 Lower Clapton Road, London, E.5.

26th November: Aireborough and District A.S. Annual Open Show, Yeaton Town Hall, Schedules from secretary, 3 Greenlea Avenue, Yeaton, nr. Leeds, Yorkshire.

3rd December: Horsforth A.S. Third Open Show at the New Civic Hall, Bradford Road, Stansingley, Pudsey. Schedules from the hon. show secretary, Miss Helm, 29 Wellington Road, New Wortley, Leeds, 12. Phone Leeds 21025.

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18th February: Rotherham and District A.S. Fourth Open Show at Brinsworth Manor School, Brinsworth Lane, Brinsworth. Details from Secretary, Mrs. J. Aitson, 9 Bent Lashes Avenue, Rotherham, Yorks S60 4BL.

14th April: Independent A.S. Open Show will be held at the Public Hall, Islington Town Hall, Upper Street, Islington, N.1.

15th April: Coventry Pool and Aquarium Society Open Show, Foleshill Community Centre, Foleshill Road (A.444), Coventry. Details from Show Secretary, S. Woodbridge, 32 Ridgeway Avenue, Styvedrale, Coventry, or Secretary, C. J. Grant, 26 Cecily Road, Chelveston, Coventry.

6th May: Orram A.S. Open Show will be held in the Orram Recreation Hall, Refuge Street, Shaw, Oldham.

12th May: The Second Annual Open Show of the Gloucester A.S. will be held at the Gloucester Education and Leisure Centre, Painswick Road. Schedules from the show secretary, Mike Brooks, 114 Melbourn Street, Gloucester, from February on.

13th May: Corby and District A.S. Open Show, at the Corby Civic Centre. F.A.B.A.S. More details later.

12th May: Cooydon A.S. Open Show, full details later.

20th May: Yeovil and D.A.S. Open Show, the School Hall, Church Street, Martock, nr. Yeovil. Full details later.

10th June: Lincoln and District A.S. All other details will be announced later.

17th June: Swillington A.S. Annual Open Show will be held at John Smeaton's School, off Barwick Road, Leeds, 14.

17th July: Sandgrounders A.S. third Open Show, Cambridge Hall, Lord Street, Southampton.

12th August: North Staffs. A.S.

9th September: Nuneaton A.S. Sixth Open Show.

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hundred entries from 33 classes and the results are as follows:

Class B: 1, A. Kirby (Plymouth); 2, J. Bragg (Torbay); 3, C. Turner (Cardiff); 4, M. Leeder (Plymouth). Class C: 1, T. Mudge (Exeter and District); 2, J. Gardner (Plymouth); 3, Mrs. B. Lucas (Plymouth); 4, A. Kirby (Plymouth). Class Ca: 1, F. Orman (Torbay); 2, Master C. Tolcher (Torbay); 3, D. Dare (Ind.); 4, N. P. Buen (Plymouth). Class D: 1, D. Noble (Hristol Aero.); 2, D. Vickery (Ilfracombe); 3, T. Mudge (Exeter); 4, Mr. Bligh (Ilfracombe). Class Da: 1, H. Gardner (Plymouth); 2, Mrs. I. Clarke (Plymouth); 3, Mrs. Kirby (Plymouth); 4, D. Dare (Ind.). Class Db: 1, 2, 3 and 4, J. Bragg (Torbay). Class E: 1, Mrs. O. Lay (Plymouth); 2, D. Dare (Ind.); 3, T. Woolley (Torbay); 4, C. Hancock (Ilfracombe). Class Ea: 1, T. Hamshire (Yate & Bristol); 2, C. Hoskins (Plymouth); 3, C. Turner (Cardiff); 4, H. Gardner (Plymouth). Class F: 1, D. Dare (Ind.); 2, Mrs. O. Lay (Plymouth); 3, T. Woolley (Torbay); 4, C. Hoskins (Plymouth). Class G: 1, D. Smithwaite (Torres); 2, M. Poole (Torbay); 3, T. Woolley (Torbay); 4, J. Davis (Torbay). Class H: 1, D. Norman (Dorchester); 2, A. Kirby (Plymouth); 3, M. Leeder (Plymouth); 4, M. Poole (Torbay). Class I: 1 and 2, E. Earnshaw (Taunton); 3, D. Norman (Dorchester); 4, C. Hancock (Ilfracombe). Class K: 1, J. Bragg (Torbay); 2, J. Edwards (Llantwit Major); 3, J. Davis (Torbay); 4, T. Mudge (Exeter). Class L: D. Vickery (Ilfracombe); 2 and 3, A. Kirby (Plymouth); 4, T. Woolley (Torbay). Class M: 1, L. Doubleday (Torbay); 2, H. Gardner (Plymouth); 3, T. Mudge (Exeter); 4, M. Hutchings (Torres). Class N: 1, E. Earnshaw (Taunton); 2, C. Turner (Cardiff); 3, M. Leeder (Plymouth); 4, J. Randle (Plymouth). Class O: 1, Mrs. Jenkins (Plymouth); 2, Master D. Earnshaw (Taunton); 3, T. Cox (Torbay); 4, P. Boswell (Honiton). Class P: R. Wigg (Llantwit Major); 2, B. Hodgkins (Plymouth); 3, J. Bragg (Torbay). Class Q: 1, T. Smith (Torpoint); 2, J. Rundle (Plymouth); 3, R. Kiese (Torbay); 4, R. White (Plymouth). Class R: J. Davis (Torbay); 2 and 4, Mrs. J. Griffiths (Torbay); 3, M. Leeder (Plymouth). Class S: 1, Mrs. J. Griffiths (Torbay); 2, D. Dare (Ind.); 3, P. Buen (Plymouth); 4, R. Boswell (Honiton). Class T: 1 and 3, C. Fidoek (Exeter); 2 and 4, T. Woolley (Torbay). Class Ua and d: 1, T. Hamshire (Yate & Bristol); 2 and 3, R. King (Torbay); 4, J. Davis (Torbay). Class Ue: 1, C. Fidoek (Exeter); 2 and 3, R. King (Torbay); 4, T. Cox (Torbay). Class V: 1 and 2, R. King (Torbay); 3, G. Thompson (Torbay). Class W: 1, M. Matthews (Torbay); 2 and 3, G. Thompson (Torbay); 4, D. Mayo (Torquay). Class Xa: 1, 2, 3 and 4, G. Thompson (Torbay). Class Xb-M: 1, A. Kirby (Plymouth); 2, C. Turner (Cardiff); 3 and 4, M. Poole (Torbay). Class Xc: 1, C. Turner (Cardiff); 2 and 4, R. Wigg (Llantwit Major); 3, T. Woolley (Torbay). Class Xu-V: 1 and 2, R. King (Torbay); 3, T. Cox (Torbay); 4, T. Hamshire (Yate & Bristol). Class Ya: 1 and 2, L. Doubleday (Torbay); 3, J. Monk (Torbay); 4, C. Fidoek (Exeter & Torbay). Class Yb: 1, Master D. Parham (Torbay); 2, 3 and 4, L. Doubleday (Torbay). Class Z: 1, J. Sparkes (Torbay); 2 and 4, R. King (Torbay); 3, Mrs. K. Woolley (Torbay). Best Livebearer: Mrs. J. Griffiths. Best Shark: H. Gardner. Best Marine: L. Doubleday. Best Goldwater: R. King. Best Junior Master: J. Gardner. Best Fish in Show and Aquarist Gold Pin: D. Smithwaite (Torres). F.R.A.S. Championship Trophy (Class Ca): F. Orman (Torbay). Cardinal.

THE October meeting of the British Marine Aquarists Association (West Midland Group) began with a Table Show. Result: 1 and 3, R. Edwards; 2, Mr. Hodgetts; 4, G. Warple. A film show was given for new members present of the types of stands the Association had made in the last two years. A slide show was then shown of some very fine marines. The trophy presented by J. Vickery will be given to the member who wins the table show each month.

IN September the Ostram A.S. held their fifteenth annual Open Show. There were 333 entries from thirty societies. The judges were: Messrs. H. Loder, F.N.A.S., L. Wood, F.N.A.S., P. Moorhouse, F.N.A.S., and L. Baxter, F.N.A.S. The Best Fish in Show award went to P. Gregory of Oldham A.S., and the best Goldwater Fish award to C. Whitney of Accrington. The prizes were presented by Councillor H. Bennett, J.P., who congratulated the exhibitors on the quality of their exhibits, and the Ostram Society on the promotion of the show. Results: Anabantids: 1, Miss A. Gregory (Nelson); 2, J. Howard (Valley); 3, S. Locke (Salway). Fighters: 1 and 3, S. A. Holland (Salway); 2, W. Armstrong (Independent). Barbs (Small): 1, 2 and 3, P. E. Gregory (Oldham). Barbs (Large): 1, J. Howard (Valley); 2, B. Walker (Morecombe Bay); 3, G. Goodman (Oldham). Labros, Sharks and Foxes: 1, N. Turner (Mixerden); 2, R. I. Palne (Merseyside); 3, J. Gullane (Buxton). Characins (Small): 1, F. E. Gregory (Oldham); 2, P. Whelan (Blackburn); 3, H. Marshalea (Oldham). Characins (Medium): 1, P. and H. Batchelor (Loyne); 2, R. Walker (Morecombe Bay); 3, D. Greenwood (Nelson). Characins (Large): 1, G. Platt (Ostram); 2, P. and H. Batchelor (Loyne); 3, B. and R. Booker (Morecombe Bay). Cichlids (Dwarf): 1, P. Clarkson (Independent); 2, Miss J. Gullane (Buxton); 3, G. Goodman (Oldham). Cichlids (Anzats): 1, J. Healey (Hyde); 2, Mrs. A. Berry (Valley); 3, R. Beaumont (Independent). Cichlids, A.O.V.: 1, Mr. and Mrs. Thorpe (Northwich); 2 and 3, D. Whiteside (Blackpool). Toothcarps: 1, S. A. Holland (Sunnybrow); 2, M. Tongue (Oldham); 3, J. Roberts (Nelson). Rasboras: 1, D. Greenwood (Nelson); 2, Mr. and Mrs. Beckenham (Oldham); 3, P. and H. Batchelor (Loyne). Danios: 1, D. Whiteside (Blackpool); 2, Mr. and Mrs. Beckenham (Oldham); 3, A. Moss (Huddersfield). Minnows: 1, H. Marshalea (Oldham); 2, P. E. Gregory (Oldham); 3, A. Moss (Huddersfield). Guppies: 1, A. Moss (Huddersfield); 2, Mrs. Leed (Valley); 3, Mrs. L. C. Hepp (Kighley). Swordtails: 1 and 3, Mr. and Mrs. Beckenham (Oldham); 2, Mrs. A. Berry (Valley). Mollies: 1, H. Waring (Lytham). Loach, Botsia and Shark: 1, R. Newton; 2 and 3, J. Howard (Valley). Platies: 1, P. Whelan (Blackburn); 2, Mr. and Mrs. Kennedy (Valley); 3, A. Moss (Huddersfield). A.O.V. Livebearers: 1 and 2, A. Moss (Huddersfield); 3, P. Whelan (Blackburn). Loaches: 1, F. E. Gregory (Oldham); 2, H. Marshalea (Oldham); 3, Mr. and Mrs. Beckenham (Oldham). Corydoras: 1, H. Waring (Lytham); 2, Mr. and Mrs. Dawson (Ostram); 3, M. Tongue (Oldham). Catfish, A.O.V.: 1, D. Greenwood (Nelson); 2, Mr. and Mrs. Shaw (Morecombe Bay); 3, H. Walker (Morecombe Bay). Goldfish: 1 and 3, C. H. Whitsey (Accrington); 2, H. Penhall (Ostram). Shubunkins: 1, H. Penhall (Ostram); 2 and 3, C. H. Whitsey (Accrington). Veiltails, Gourdas and Lionheads: 1, 2 and 3, C. H. Whitsey (Accrington). Fantails: 1 and 2, C. H. Whitsey (Accrington); 3, H. Penhall (Ostram). Moors: 1 and 2, C. H. Whitsey (Accrington); 3, S. Walsh (Accrington). A.O.V. Asia or U.S.A.: 1, 2 and 3, S. Walsh (Accrington). A.O.V. European: 1, H. Penhall (Ostram); 2, C. H. Whitsey (Accrington); 3, S. Walsh (Accrington). Breeders (Egglayers): 1, Mr. and Mrs. Thorne (Northwich); 2, J. Roberts (Nelson); 3, A. Axon (Ashton). Breeders (Livebearers): 1, Mr. and Mrs. Thorne (Northwich); 2, A. Moss (Huddersfield); 3, D. Whiteside (Blackpool). A.O.V. Not Listed: 1, P. and H. Batchelor (Loyne); 2, D. Grogan (Blackburn); 3, D. Whiteside (Blackpool). Egglayers (Pairs): 1, A. Moss (Huddersfield); 2, F. E. Gregory (Oldham); 3, D. Whiteside (Blackpool). Livebearers (Pairs): 1, W. Freeman (Bolton); 2, Mrs. Lord (Valley); 3, A. Axon (Ashton). Junior Section: 1, W. L. Booker (Morecombe Bay); 2 and 3, J. Boardman (Ostram).

THE Yeovil and District A.S. (F.R.A.S.) were well beaten by Bournemouth A.S. by 60 points to 29 points in the semi-final of the A.S.A.S. Inter-Club Quiz. Thanks go to Mr. Adams and Mr. Aston of Salisbury A.S., who conducted the quiz. The Table Show results were: Labrynthia: 1, Mrs. Forward;

2, A. Rendell; 3, M. Fischer; 4, A. Ertles. Tropical Breeders: 1, K. Forward; 2, Mrs. Nicholls; 3, M. Fischer; 4, A. Ertles. Goldwater Breeders: 1, S. Langdon; 2 and 3, G. Axon. Koi Carp: R. Heather.

THERE was a good entry of 370 at Penarth A.S. annual Open Show. The show was very successful with the following results: Furnished Aquaria: R. Newton. Barbs: 1 and 4, R. Newton; 2, J. Allen; 3, N. Gray. Characins: 1, C. Box; 2, N. Gray; 3, S. Hedges; 4, C. Harding. Hyphessobrycon, Hemigrammus and Ctenopoma: 1, R. Hoare; 2 and 3, R. Daws; 4, D. Egan. Cichlids: 1, 2 and 4, R. Daws; 3, R. Hoare. Angels: 1, G. Harris; 2, S. Nelson; 3, N. Gray; 4, R. Newton. Apistogramma, Nannacara and Pelmatochromis: 1, R. Hoare; 2, R. Newton; 3, R. Holmforth; 4, C. Turner. Anabantids: 1, S. Hedges; 2, A. Pick; 3, H. Sutherland; 4, J. Isidore. Siamese Fighters: 1, C. Morrison; 2, R. Daws; 3, F. Sutherland; 4, C. Harding. Fighting Toothcarps: 1, 2 and 3, M. Addico; 4, G. Churchill. A.V. Catfish: 1 and 2, N. Gray; 3, P. Player; 4, R. Daws. Corydoras: 1, Mr. and Mrs. M. Williams; 2, W. G. Best; 3, C. F. Scriven; 4, S. Hedges. A.V. Tropical (Junior): 1, 2 and 4, N. Gray; 3, K. Williams. Rasboras: 1 and 3, R. Hoare; 2, N. Gray; 4, C. E. Morrison. Danios and Whitecloud Mountain Minnows: 1, N. Gray; 2 and 4, J. Egan; 3, S. Hedges. Loach, Botsia, Eel and Shark: 1, R. Newton; 2, R. Hoare; 3, N. Gray; 4, J. Buckingham. A.O.V. Tropical Igglayers: 1, R. Hoare; 2, C. Box; 3, N. Gray; 4, S. Hedges. A.V. Pairs: 1, D. Warron; 2, R. S. Wigg; 3, Mr. and Mrs. Williams; 4, P. J. Greenwood. Guppies (Male): 1 and 3, D. Egan; 2, C. Morrison; 4, J. Thomson. Guppies (Female): 1, K. Player; 2, R. S. Wigg; 3, J. Egan; 4, P. J. Greenwood. Platies: 1, P. Player; 2, R. Hoare; 3, Mr. and Mrs. Williams; 4, J. Egan. Swordtails: 1, N. Gray; 2, R. Perkins; 3, G. Harris; 4, C. Morrison. Mollies: 1 and 2, N. Gray; 3, C. Morrison; 4, D. Egan. Goldwater: 1 and 2, Miss G. Roper; 3 and 4, S. Hedges. Breeders Igglayers (Tropical): 1 and 3, C. Harding; 2 and 4, C. Turner. Breeders Livebearers (Tropical): 1, R. S. Wigg; 2, C. Harding; 3, C. Turner; 4, P. J. Greenwood. A.O.V. Livebearers: 1, D. Hesley; 2, N. Gray; 3 and 4, K. Thomas. Best Fish in Show: Mr. and Mrs. M. Williams. Highest Aggregate Points in Show: N. Gray. Best Breeders Team: R. S. Wigg. Highest Aggregate Points by a Pseudo member: R. Newton. Best Penarth Fish: C. Box. Raffle Ticket No. 0905 not claimed; would winner please contact show secretary, A. Trotman.

RESULTS of Harlow A.S. Open Show: Club Furnished: 1, Unseed; 2, Harlow. Individual Furnished: 1, Mrs. J. Salisbury (Harlow); 2, Mrs. B. Gowell (United); 3, S. Gowell (United); 4, Mrs. J. Arrow (East London). Barbs: 1 and 4, Mr. and Mrs. Hubert (S.L.A.D.A.S.); 2, J. Duncan (Harlow); 3, T. Woolley (Harlow). Characins: 1, Mrs. I. Murdoch (Harlow); 2, R. Kerridge (Harlow); 3, Mrs. S. Hedges (B. Green); 4, P. Coyle (Ind.). Cichlids: 1, Mrs. B. Gowell (United); 2, Mrs. I. Murdoch (Harlow); 3, Mr. and Mrs. Hubert (S.L.A.D.A.S.); 4, R. Thoday (Dunmow). Dwarf Cichlids: 1 and 2, W. Goodwin (B.K.A.); 3, D. Gille (Harlow); 4, K. Kerridge (Harlow). Labyrinthia: 1, Mrs. S. Hedges (B. Green); 2, Mrs. I. Murdoch (Harlow); 3, T. Woolley (Harlow); 4, E. Watson (—). Fighters: 1 and 4, Mrs. B. Gowell (United); 2 and 3, Mr. Bowers (Ind.). Killers: 1 and 2, W. Goodwin (B.K.A.); 3, E. Hurley (Harlow); 4, J. Lambert (Harlow). Tropical Catfish: 1 and 4, C. Trowbridge (Harlow); 2, M. Stago (Dunmow); 3, R. Peacock (Walthamstow). Corydoras: 1, P. Mope (Bletchley); 2, K. Adams (S.L.A.D.A.S.); 3, R. Bowers (Ind.); 4, R. Kerridge (Harlow). Rasboras: 1, Mrs. I. Murdoch (Harlow); 2, Miss Arrow (E.L.A.P.A.); 3, P. Coyle (Ind.); 4, Mrs. J. Smith (—). Danios: 1, R. Bowers (Ind.); 2 and 3, R. Kerridge (Harlow); 4, R. Bowers (Ind.). Loaches: 1, R. Bowers (Ind.); 2, T.