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THE **AQUARIST**  
AND PONDKEEPER





# THE AQUARIST AND PONDKEEPER

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Laughing Frog, "Fred,"  
after dark at edge of pond.

May, 1977

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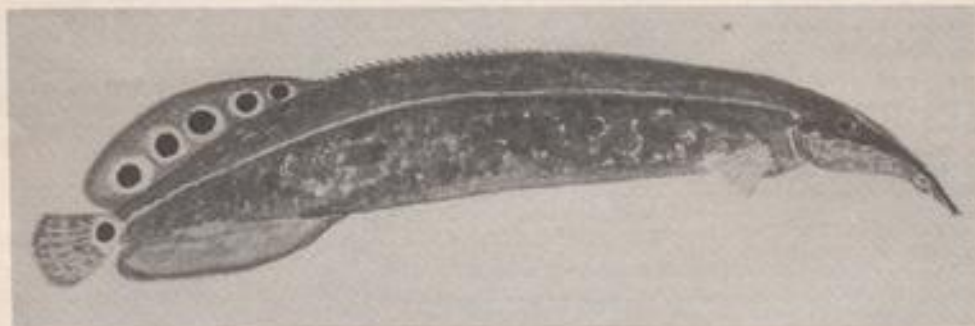
# SPINY EELS

Written & Illustrated by Jack Hems

SPINY EELS belong to the family *Mastacembelidae*—and let me say at once that, apart from a certain similarity of shape, they have no connection at all with the eel of the fishmonger's slab or wet tray. (The invaluable Sterba makes passing mention of some spiny eels of the family *Chaudhuriidae*. If any species of this family of fishes have ever come on the market—in this country, at any rate—then, in nearly fifty years of tropical fishkeeping, I have never had one brought to my notice, that is, in an aquarium magazine or dealer's tank. Perhaps some reader has some information to offer?)

anteriorly. No ventral fins are present. The upper jaw terminates in a movable and rather pronounced hook-like snout. The scales are small. Interestingly, spiny eels can swim backwards as easily as forwards. They also have the habit of rearing up onto the tail after the manner of a king cobra ready to strike.

Although they can be seen in all levels of the water, they are essentially bottom dwellers and prefer to stay hidden in thickets of plants or buried up to the gill-slits in whatever carpets the floor of their tank. They often remain out of sight for hours on end. Another thing, they are more active at night than



*Macrogathus aculeatus*

But to return to the *Mastacembelidae*. *Mastacembelids* are distributed in the natural state over the southern half of Africa and from West Pakistan and India eastwards to Indonesia. They are found in fresh and brackish waters.

Few spiny eels are dingy in appearance. On the contrary, most are brightly or, to the say the least, attractively coloured. The fire eel, so-called, that grows to a length of about 2 ft., is dark chocolate brown to blackish adorned with blood-red horizontal stripes and irregular streaky markings. It hails from south-east Asia and is known to science as *M. erythrotaenia*.

*Mastacembelids* are not difficult to identify. They have a ribbon-like dorsal fin that extends in its entirety along most of the back. The greater part of this fin is thorny spiny. The anal fin is not half the length of the dorsal fin but, like the dorsal, is spiny

during the day. In the wild state, the larger species are served at table. They are said to make good eating.

Few, if any, species of spiny eel living in captivity will accept dried food or even shredded red meat. Their dietary interests lie only in small living things such as whiteworms and so on. The larvae of gnats and baby livebearers makes an acceptable change.

Every care should be taken to see that spiny eels introduced into a community tank receive their life-sustaining and proper share of food. Generally speaking, they are shy feeders and are apt to be driven or frightened away from food by boisterous companions. The way to feed them, then, is to attract the other fishes to one end of a tank (a rain of food will achieve this end) and then drop in a goodly number of, say, whiteworms just where a

*Continued on page 44*

# THE SHUBUNKIN

## A GRAND FISH FOR TANK OR POND

says Arthur Boarder

This handsome fish is ideal for the furnished tank or for the garden pond. The exceptional colouring makes it one of the most attractive fish among the varieties of goldfish. When one compares its colours with that of the common goldfish it seems hard to believe that the shubunkin is just a development of that fish. As a young fish of up to three inches long overall, it is one of the finest for the furnished tank of about 24 x 12 x 12 inches, and when larger should be placed either in a much larger tank, say 36 inches long, or transferred to the garden pond.

### TWO TYPES

There are two distinct types of shubunkin, the London and the Bristol. The former conforms to the common goldfish in shape whilst the Bristol is a much more streamlined fish with larger finnage. As for colour, these two fish should be of the same attractive colourings, which is a blue ground with red, violet, yellow and brown, all scattered with black markings. Of the two types it is correct to assume that the London is the hardier fish as the finnage is less flowing and not as likely to become affected with fin-rot or congestion when the fish winters in an outdoor pond. Not that I suggest that it is not possible to keep the Bristol type in a pond but that it is more prone to become troubled in a severe winter.

One often finds advertisements for Bristol blue shubunkins which give the impression that an ideal fish should be all blue. This is not the case as unless the fish has at least some of the necessary colours it is not likely to win at a show. The ideal colour is for the fish to have a good blue ground with bright red markings and a smattering of black. This latter must not be an anaemic brownish shade but a distinct black. The other colours such as violet, yellow and brown are usually found where the main colours meet and usually are not very conspicuous and on some fishes these extra shades cannot be seen.

### VITAL STATISTICS

The body of the Bristol should show the upper and lower contours of fairly equal curves with no breaks in the smooth flowing lines. The head should be of

medium size with small mouth and rounded snout. The nasal flaps should not be conspicuous. The caudal peduncle should be narrow, showing a distinct waist. The caudal fin and anal fin should be single and any fish with double ones will not be accepted in a show. The dorsal fin to be held erect and a gradual curve up the front and a slightly concave rear. The pectoral fins should be of a good length but not as long as the pelvic and anal fins, which should be well developed and rounded at the tips. The caudal fin should be broader than its length with wide lobes, rounded at the tips and showing a slight concave curve just before the tips.

One of the outstanding differences of this fish to many types of goldfish is that it appears to have no hard scales. If one can imagine taking a normal scaled fish and then running the thumbnail from tail to head, thus removing all the hard scales, the result of the state of the body would be that it is scaleless. Many of the best coloured shubunkins will show a few hard scales and when such a fish is seen the absence of the majority of hard scales will be very obvious. Besides appearing practically scaleless, the fish should have soft gill plates. Again, if one examines a fish with one hard gill plate and one soft, the difference will be plainly seen. Many of the better coloured fish will have hard gill plates and it seems that the darker coloured ones are more prone to carry this fault than the paler coloured ones.

One of the faults seen in shubunkins is a too sturdy body. A female fish in spawn may appear to have too deep a body and until eggs have been laid it is probable that such a fish should not be shown. Another fault is that the fins are too large and flowing. This often shows up very markedly in an old fish as there is a tendency for the fins to grow rather out of proportion once the fish gets over four years old. Many a prize winner at three years of age would be passed over once it was over four or five years old. The most important feature of the shubunkin is colour. I contend that unless the fish has the required colours it is not a shubunkin. I have seen fish exhibited which have no blue, no red nor any black. They appear to

*Continued on page 67*





## 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.

## TROPICAL QUERIES

by Jack Hems

I have a two-tier stand supporting a 4 ft. coldwater tank and a 4 ft. heated tank. The top tank is stocked with three small Japanese coloured carp and two small orandas; the bottom tank houses a collection of miscellaneous peaceable tropicals. Both tanks are well-aerated and filtered. The room the tanks are in is kept warm during the daytime and this, combined with the heat rising from the tropical tank, keeps the top tank at a temperature of about 60°F (16°C) to 62°F (17°C). Can you explain why the pondfish keep so well in such an unnatural environment?

The answer is that your orandas are not pondfish and do, indeed, require a temperature in the lower to middle sixties (°F). Young Japanese coloured carp or *koi* are quite accommodating in the matter of temperature provided they are not starved of oxygen. You will find, however, that the *koi* will soon outgrow their allotted swimming space and will then have to be moved to a spacious garden pond as soon as the temperature (outdoors) is right.

I have introduced two *Balantiocheilus melanopterus* into my 3 ft. community tank. I have been told by a fellow aquarist that they will outgrow their present tank space before a year is out. Is this true?

Provided your tank is not stocked to capacity now or in the near future, the two *B. melanopterus* will increase in size over the next twelve months. All the same, it will take several years for them to attain the length this species is known to reach in captivity, which is about 14 in.

Would *Rasbora elegans* be suitable in my 24 in. x 15 in. x 12 in. tank stocked with guppies, platies and several small tetras and barbs?

Provided you are aware or bear in mind that *R.*

*elegans* attains a length of about 6 in. and therefore requires plenty of swimming space in uncrowded conditions, it is quite suited to living with inoffensive fishes.



*Rasbora elegans*

What information can you give me on the maximum length, feeding habits and general behaviour of *Luciosoma setigerum*?

*L. setigerum*, a member of the family Cyprinidae, can grow to a length of at least 10 in. It lives and feeds at or near the surface. In the main its food consists of insects, the larvae of insects, and so on. This, of course, in the wild state in Thailand and Borneo. In the aquarium it will flourish on tiny pieces of meat flicked onto the water, and whiteworms, crumbled flake food, gnat larvae and the small fry of livebearers and oviparous fishes. It is an accomplished leaper and can, and will, jump out of its aquarium if given the opportunity. Hence the tank it inhabits must not be left uncovered. It is not unsuited to a community tank stocked with robust fishes. In its larger sizes, however, it must not be trusted with any species much smaller than itself. It has a big mouth and a hearty appetite.

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I should like to know the maximum size, country of origin and general requirements of the lined barb.

*B. lineatus* attains a length of about 4 in. and is native to Malaysia. It demands nothing special in the way of food or temperature and makes a well-behaved inmate of a community tank.



*Barbus lineatus*

I would appreciate some information on the Japanese weatherfish.

This species, formally known as *Misgurnus asquill-caudatus*, is found in China as well as in Japan and grows to a length of about 10 in. It should be kept and cared for in the same way as the common and larger weatherfish (*M. fossilis*) from central and eastern Europe. In short, give it rather shallow water, average room temperature, and a diet of worms and raw red meat. Keep its tank properly covered with a hood or piece of glass or else it will end up on the floor and die unless found soon enough.

Please fill me in on the maximum size, general attitude to other fishes, and requirements in the way of food of the blue chin catfish.

This catfish attains a length of about 4 in. and appears to mind its own business. At least, I have never known it attack or worry other fishes of about its own size. It feeds on the regular dried foods, live foods, and substitutes for live food such as tiny pieces of raw lean meat or shredded white fish.

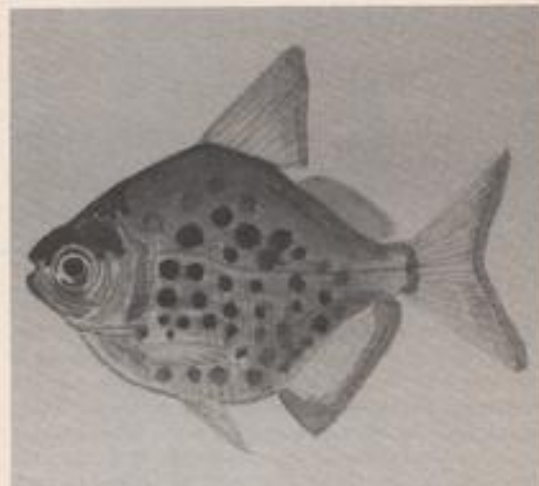
I have a 30 in. x 12 in. x 12 in. tank illuminated by a 15-watt Gro-Lux lamp. I grow various cryptocorynes all right but lacey-foiled plants die. Can you tell me where I am going wrong? I do keep the light on for 12 hours a day.

By and large, species of *cryptocoryne* flourish well in a poorish light but most lacey-leaved plants are lovers of bright light and 15-watts is far from sufficient even for a 12-hour day. Step up your wattage to 20 watts and keep the light on for about 14 hours a day.

May, 1977

I should appreciate some hints on the care of *Metynnis maculatus*.

*M. maculatus* or the spotted metynnis appears to be more at home when it has others of its own kind to join and swim with in water maintained at a temperature in the middle to upper seventies (°F). Greenstuff forms a large part of its diet in the wild, so most plants in the aquarium are soon chewed to shreds. Tough-foiled plants stand more chance of survival as, for example, species of anubias or microsorium fern. Greenfood to offer includes shredded or scalded lettuce, cooked spinach or cooked young nettle tops. In addition, a good flake food and frequent tit-bits such as whiteworms. Ordinarily, an aquarium for *Metynnis* is best decorated or furnished with suitable pieces of bogwood or stone. The species is not vicious but it does tend to rush at other fishes much smaller than itself and frighten them away from food. It can reach a length of about 7 in. in the space of two or three years.



*Metynnis maculatus*

What is a pike characin?

A pike characin or cachorro is a characin from the upper Amazon known to science as *Acestrorhynchus cachorro*. I doubt whether this species has come on the market very frequently because it is very predacious and grows to a large size. There is quite a lot of information about this pike-shaped characin in the loose-leaved edition of *Exotic Tropical Fishes* (TFH Publications).

I am thinking of buying an all-glass fish tank. The measurements are 4 ft. x 2 ft. x 2 ft. and the dealer has told me that though it has no metal frame it will not burst at the seams. Can I accept this statement as true as I do not



wish to run the risk of flooding my living room?

Provided the tank has been properly made all will be well. Make certain, however, that the base of the tank is placed on a completely flat base and, as an extra precaution, stand it on a sheet of expanded polystyrene or thick felt.

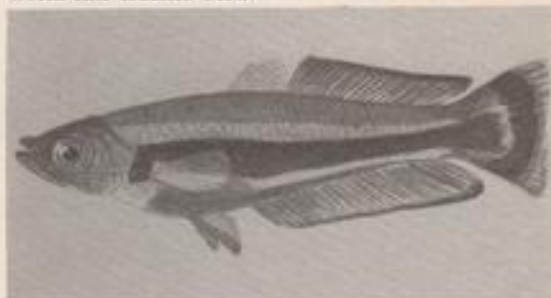
I have a 54 in. x 15 in. x 12 in. tank in which, some time ago, I introduced one each of the following cichlids: *Cichlasoma salvini*, *C. octofasciatum*, *C. biocellatum*, *C. meeki*, *C. severum*, *C. cyanoguttatum*, *Tilapia mariae* together with a large silver dollar and a catfish called *Leiocassis siamensis*. My problem is the condition of some of the fish. They are showing torn fins, raw places on the sides and some fungus. What should I do?

It's not a case of what you should do but what you have done. In the first place you should have checked with a few good books on the habits of some of your cichlids. Now, your only course of action is to isolate the injured fishes and treat them with a fungicide. Next, visit a specialist tropical fish dealer and inquire whether he would be prepared to exchange some of your worst bullies for less aggressive or more sociable species.

What quality of water do you recommend for the eel-like loaches of south-east Asia?

First and foremost, loaches of the family *Cobiridae* flourish best in clean and well-oxygenated water.

Secondly, as most of the eel-like loaches (I imagine you mean species of *Acanthophtalmus*) live, in the natural state, in well-forested areas characterised by high rainfall, it follows that the acids that seep out of decaying vegetation drain into the rivers, streams and lakes. It is, therefore, reasonable to assume that soft and acid water suits the eel- or worm-like loaches best.



*Bedotia geayi*

Will the Madagascar rainbow fish behave itself in a community tank?

*Bedotia geayi* is peaceable and leaves the plants alone. However, it is not really suited to a tank filled with the general run of tetras and other acid-loving fishes; for what *B. geayi* does best in is hard and alkaline water. Hence it lives and breeds best in a tank on its own filled with water that is neither soft nor acid.

## SPINY EELS *continued from page 40*

spiny eel is lurking or lying buried. Do not fear that any worms that burrow into the compost will die and putrefy. Spiny eels are adept at rooting burrowing worms out of sand or grit.

Apart from snapping up any livebearer fry swimming around, spiny eels are no danger in a community tank. Mark you, very large species might be able to tackle a very small neon tetra, but then no-one in their right senses mixes very small and large fishes together.

One of the most spectacular-looking of the spiny eels is *M. armatus*. This species from India through to Sumatra is popularly called the tyre-track eel. It is grey-brown shading to yellowish on the belly. Dark zig-zag markings on the sides give the effect of a tyre track. This spiny eel attains a length of about 30 in. Not always, however. A mastacem-belid commonly seen is *M. maculatus*. As its trivial name suggests, this fish is patterned with black spots. These are present, like the ocelli of a moth, along the base of the soft portion of the dorsal fin. The body itself is light brown with some slightly darker markings. The edges of the vertical fins are coloured yellow. It is native to Thailand, Borneo and adjacent

islands. It grows to a length of about 18 in. *M. zebrius* or the zebra eel occurs in Burma. It remains a medium-sized fish in the aquarium but reaches about 18 in. in the wild state. Its greyish-brown sides are beautifully banded with zebra-like markings. *M. argus* from Thailand seldom exceeds 9 in. The ground colour is yellowish to brown adorned with a number of pale green to white blotches posteriorly. Belly white. *M. loennbergi* is found in tropical West Africa and seldom reaches more than about 7 in. For all that, it makes up for its rather pygmy size by its colourful appearance. It is dark brown to nearly black, with pale yellow to yellowish spots and irregular markings on the sides. The lower sides, though patterned, are paler than the upper sides. The margin of the dorsal fin has dark spots. The anal fin has dark vertical stripes. *Macragnathus aculeatus* was the first spiny eel I ever kept. I had two which lived several years but never attained any great size. Ordinarily it should grow to about a foot. It is widely distributed over a large area of south-east Asia and is of a pale olive hue or pale khaki-brown hue shading to creamy ivory to yellowish white on the belly.



# GOLDWATER QUERIES

by Arthur Boarder

I have a tank, 12 x 8 x 8 in., with a two inch goldfish and a two inch moor. The moor cannot seem to swim near the bottom of the tank but floats up to the top when it tries. What is the reason please?

It could be an excess of food. In a garden pond, days when the water is like such a tea in the hot that one as long as larger than success.

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## KOI QUERIES

My pond is 10 ft. x 6 ft. x 2 ft. with external filtration and a water-exchange unit. I have 14 goldfish at present and would like to add three or four Koi carp. Is my pond large enough, will the same diet for goldfish be all right for Koi and have you any ideas for keeping cats away from my pond?

As you already have some form of filtration and a water-exchange system, then your pond can easily accommodate three or four Koi about 6 in. long. (There is no need to call them Koi carp because Koi is the Japanese word for carp). The Koi must be quarantined first and a large tank, a baby bath or children's paddling pool would make a suitable container but it must be tightly netted over at all times. Koi have a habit of jumping out and many a good Koi has been lost in this way. If the weather should be warm then an aerator must be used, especially at night, otherwise the Koi may die from lack of oxygen in a small volume of water. A period of at least 6-8 weeks is necessary for quarantine and obviously during that time it will be essential to change some water at regular intervals. Your pond would hardly be deep enough for large Koi to over-winter safely and in the meantime I suggest that you cover at least part of your pond during the winter months. Koi will eat anything that goldfish do, but usually more of it. It must be remembered that Koi, being carp, can grow into large fish if given good conditions and Koi of between 12 in. - 20 in. are quite commonplace in Britain today. If one appreciates the amount of food required to produce large fish and consequently the amount of excreted matter from such fish then it may go a little way towards explaining the desirability or even necessity of some form of water filtration and water exchange. This fact obviously puzzles many people but experience has demonstrated the problems of keeping Koi healthy in relatively small ponds.

Cats are a perennial problem to pondkeepers and various methods such as netting over, or slabs overhanging the ponds have been adopted. However, if anyone intends making a custom-built Koi pond then it is an excellent idea to determine the water level by means of a top overflow about 9 in. - 10 in. below a surrounding wall. This keeps fish beyond the reach of marauding cats who swiftly lose interest.

In some cases a temporary solution can be similarly achieved by placing a two-brick high wall around the pond if it is not possible to lower the water level. Low water is the best cat deterrent.

of goldfish will breed together so that you could get all sorts of types from the goldfish, shubunkins and moors. The Koi and Tench are not likely to breed with them, certainly not the Tench. Fish bred in a pond with a mixed assortment of goldfish varieties

by Hilda Allen

I have a large pond which I intend to stock with Koi this year. I would like to keep to one variety only, so can you advise me which is the best variety and where I can buy them in this area please?

You have given me an impossible question to answer as so much depends upon one's personal preference. All Koi are beautiful and while one person may be attracted to the colourful patterns of Taisho-Sanka or Kohaku, another may find the unbelievable blues of the Shusui quite irresistible. Few Koi-keepers will ever forget the magic of seeing their first Ohgon and the metallic Ohgons in various shades of gold, silver and orange remain firm favourites of many people.

I have sent you the name and address of a company that deals exclusively in Koi. You would be advised to pay them a visit and see most varieties of Koi all together. The choice would then be yours or you may agree that the mixture of colours and patterns is the most attractive feature of keeping Koi. In my opinion Koi of less than 6 in. - 8 in. in length are hardly worth buying for a pond and all prospective purchases should be closely examined. This is best achieved by asking that they be put into some clean water in a polythene bag, one at a time, where they can be inspected from all angles. Koi are not cheap and reputable Koi-dealers do not object to this close scrutiny. The Japanese names for the different varieties of Koi are attractive and translation mostly gives some indication of colour and patterns, etc., but it should be remembered that they are all one fish, namely carp.

My problem is that having made a large Koi pond I am not sure which plants to introduce, especially since I have recently been told that Koi ponds should not have any plants at all.

Your last statement is not strictly true. It is all a matter of being practical and I do not know what you consider to be a large Koi pond. In any case you would be wise to have some oxygenating plants and one or more water-lilies in the beginning. Koi, especially small ones, appreciate the shelter of plants and may be uneasy in bare ponds. Water-lilies provide useful shade during periods of bright sunlight when Koi "bask" beneath the leaves.

In my opinion the marginal plants such as the various rushes, iris, marsh marigolds, etc., are not sufficiently useful in a Koi pond for the space they

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Bottom living fishes such as the Loach and Miller's Thumb are not good occupants but Minnows and Gudgeon can be used, especially the former. Sticklebacks are not good fish for the mixed community pond.

**When is the best time to make a pond and can you give me any advice on making and stocking one for the garden?**

The spring is the best time to make a pond and if a good liner is used it can be done at any time during the summer. By using a good type liner it is possible to make the pond and stock it in one day, as there is no need for maturing as would be the case with a pond made with concrete. It is not possible to give you all the advice necessary to make and stock a pond in a short answer, but if you get my book, "Coldwater Fishkeeping," you will find all the information you need for making and stocking the pond with plants and fishes. It also gives you all the information for maintaining the pond in good order as well as breeding and rearing fishes.

**Are there any pool heaters on the market?**

Garden pools are not usually heated. Some may have a small electric heater in the pond during the winter just to keep a small part open during frosty weather. There are submersible cable heaters on the market but it is not usual to heat a garden pond and with the present high price of electricity, it would be very expensive and really be of little use. Should one need to give young fish any extra warmth to hasten growth, this is better done in a separate tank when much less electricity would be needed. I am enclosing an address from where you could get a pond heater if required.

**What sort of pump would you recommend for a fair sized pond?**

I do not know for which purpose you need a pump. The average pond does not require a pump and it is only when a fountain or waterfall is added that one is necessary. There is a submersible pump which will serve a fountain and a larger type for working a waterfall. There is also a more powerful type for using at the pondside for emptying the pond. I used a quarter horse power type for forty years and it never lost any efficiency. I advise you to send for a catalogue from one of the advertisers in the "Aquarist and Pondkeeper" and you will find all the information there you require.

**I have a fair sized garden pond with a number of varied goldfish and a couple of Tench. Although I have had the pond for two years I still am not sure when to feed the fishes and on what food is best. All fishes appear in good condition. Can you suggest what to feed and when please?**

This is a problem for many new pondkeepers and appears to be little understood. When one has been keeping fishes in a tank in the house and a certain method of feeding is used, it is not always that the same methods will be all right in a pond. In the first place it must be realised that in a well planted pond there is always a certain amount of food in the water. Many larvae from insects may be in the pond and soft vegetation may be present on which many fish will feed. If a pond has been in existence for a couple of years it is surprising what a range of live food may be living there. If any water snails have been added there may be food for the fishes from young snails.

It is not only the possible amount of natural foods in the pond which can influence the amount of added food required. The temperature of the water also has a marked effect on the amount of food necessary for the well being of the fishes. As long as the water is well oxygenated the warmer the water the more food can the fishes eat and digest. In many winters there may be no need for any artificial feeding at all, except perhaps a little during a mild spell. Therefore one needs to feed well during the warmer months of the year and decrease the amount as the water cools.

As for the kinds of food required for the usual pond fishes kept, there is one which I think cannot be bettered. That is the garden worm; I have never known any healthy fish to refuse to take one, and I have known fancy goldfish to eat them when there is ice on the water. For small fishes the worms can be broken up. As the garden worm does not live in water it is certain that it could not introduce any water borne disease or any pests to the pond. As for dried foods, a very good standby are the pellets, often called trout pellets. If a few are thrown on the water the fish should be up for them within seconds if they are hungry. If they are not taken almost immediately, give no more that day. Although flake foods are very good as a food for fishes kept in indoor tanks, I do not think that they need be fed to pond fishes as they could prove expensive and a type of pellet is better. Although the dangers of over-feeding the fishes in a pond may not be nearly as bad as when this is done in a tank, it is still much better to err on the minimum side when feeding is considered. There is one very good test which I have used for many years to see if the fish are on the feed. It is to throw a small piece of dry brown bread crust on the water. If no fishes appear to bite at it within a minute, they are not hungry and no other food should be offered.

It is, of course, possible to feed the fishes on many other kinds of live foods, but be careful not to use any from waters which may be infested with pests etc.

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the amateur. Research is still being done to determine the light inducement factors, temperature variations and depth ratios for individual species.

Viviparous propagation is easy. Some lilies produce young plants directly from the leaves, in the image of the adult plant. The young plant develops at the point where the leaf-stalk (petiole) joins the leaf (lamina). The small tuber and the cluster of the root system develop on the underside of the leaf. These tiny plants should be removed and planted in a shallow container or a pot filled with rich clayey soil and placed either in a very shallow aquarium or in the case of hardy water-lilies in the shallowest areas of the outdoor pond, depending on the type of water-lily being grown.

Now as to the question about whether your lily will flower; it all depends on the species. If I can remember, your plant is *N. rubra* and I am sure it should flower this year provided adequate light is given from above. Several aquarists I know have had this species flowering during the first year.

The tank in question is 36 in. x 15 in. x 12 in., it is equipped with 50 watts of True-Lite on for 14 hours a day, the water is 6 DH with a pH of 6.8. It is filtered by a reverse Eheim filter, through peat and filter wool. The main bulk of the tank is planted with *Wistaria*, which is my problem.

I know *Wistaria* goes into a sleep position at night, when the lights are off, but at 8.30 p.m. with the lights on, my plants take up the sleep position. Is this normal? I originally only used a 30 watt tube, but found my plants were turning yellow. With the additional light they are now turning green, but the edges are brown as if they are burnt. Is it possible to burn plants underwater. If not what, in your opinion, is wrong?

Your Water *Wistaria*, i.e., *Synnema triflorum* (pronounced Sin-nay-ma try-floor-um) is a perennial marsh plant, which grows in ditches and drainage channels in rice fields of Sri Lanka, India, Burma and Thailand. This plant requires a good com-

bination of sunlight and artificial light. Therefore I suggest you ensure that it is planted in your tank so that it receives maximum sunlight filtering into your tank. You are certainly giving plenty of artificial light by using the Tru-Lite for 14 hours a day. In actual fact you don't need to give more than 10 hours of such lighting.

The reason why your plant goes to 'sleep' position around 8.30 p.m. is, that this is obviously the end of its natural daily cycle, even though it is living in artificial conditions. Your plants have recovered from yellow to green because by increasing the wattage from 30 to 50, you have quite correctly increased the light intensity. However, now you find the plant tips turning brown. This is quite certainly due to the breakdown of the plant cells on the leaf-tips. This can be caused by several factors:

- (1) High concentration of intensive heat.
- (2) High concentration of light.
- (3) Shallow tank.

I suspect your problem is due to high concentration of artificial light over a prolonged period. Try and see whether cutting down the period of artificial lighting will not improve things.

Your water condition appears to be suitable, as this plant requires slightly acid, soft water.

**Is there a Water Clover? Can you give me some information?**

Yes, there are several species. They belong to the genus *Marsilea*. There are at least 70 species throughout the world. *Marsilea* are small aquatic ferns with long, creeping rootstocks which are wiry. The four-leaved lamina is borne on a long thin stalk or petiole. In its natural habitat it grows emersed in shallow ditches, stagnant waterholes and by the water's edge of rivers.

Of the species suitable for aquaria, *M. crenata*, *M. drunmondii*, *M. hirsuta* and *M. quadrifolia* are recommended. They all prefer a clayey cum sandy bottom. A small quantity of peat can be incorporated, as they prefer acidic conditions. A lower range of temperature up to 72°F is ideal. They require subdued lighting. Strong light should be avoided.

## KOI QUERIES *continued from page 47*

require and in any case Koi ponds do not usually have shelves. Most of the marginal plants can be grown satisfactorily in a bog garden where they are free of the unsightly blanket-weed which so often clogs and spoils pond-grown plants.

While the Koi are small the oxygenators and water-lilies will thrive, but large Koi are robust, active fish and their activities are usually detrimental to plant life. Koi are perfect scavengers and delight in sorting-out plants and sifting any soil contained in planned baskets to the despair of their owners,

some of whom ultimately remove the remains altogether.

Koi are not vandals, but just doing what comes naturally to all carp, but it is possible to keep water-lilies at least, to add beauty and shade for as long as there is sufficient space for growing Koi.

A final word of warning, nothing from the wild, not fish, plants or *daphnia* should ever be introduced into a Koi pond, this will inevitably lead to problems especially difficult to eradicate such as flukes, leeches, fish lice and even white-spot.



## PLANT QUERIES

I gather I am not alone in my futile attempts to grow plants in my tropical aquarium. This is 4 ft. x 2 ft. deep and 1 ft. 6 in. wide, is let into an outside wall, and lighted for 12 hours with 3 x 40 W. Grolux fluorescent lamps. Temperature 68° F under sand and power filter. For a change I am contemplating converting to coldwater fish, maybe Koi? and question the water temperature during winter... the growing tips of *Cabomba* plants break off. I really think I would like to convert to coldwater, and welcome your advice.

According to what you say the light intensity is adequate for most aquatic plants grown in aquaria. However, just a base of sand is not quite adequate, as this does not generally contain substantial plant nutrients. The best thing would be to mix some clay or incorporate a layer of peat so that the growth is enhanced. As regards your water condition, it could be that it is either too acid or too alkaline. You do not give the precise condition. It also could be that there is a concentration of mineral ions detrimental to plant growth or even the lack of basic plant nutrient in the planting medium.

The temperature you maintain is a little bit too low for some *Cabomba* species, but for winter growth it is adequate. *Cabomba caroliniana*, however, will tolerate a lower temperature and a lower intensity of light. As *Cabomba* tolerates minimal water turbulence it should be planted where this condition is prevalent. The scientific reason why the tips of *Cabomba* plants break off is that its either due to high turbulence of water or inadequate mineral salts in the vascular cell sap at the apex or crown of the branching stems.

If you still contemplate converting your tank to coldwater fish, I suggest you initially read that useful book of Mr. Arthur Boarder's, *Coldwater Fishkeeping*. You can also write to his Coldwater Queries.

### Can you please tell me the scientific name of the Water Hyacinth?

Water Hyacinth is *Eichhornia crassipes*. It belongs to the family Pontederiaceae, and genus *Eichhornia*, which is named after J. A. F. Eichhorn (1779-1856), who was a Prussian Councillor of State.

Though it is a genuine indigene of tropical South America, its spread to tropical Asia and Africa has been spectacular. It is found in Indo-China, Malay peninsula, Phillipines, Sri Lanka, India, Japan, Central America, some Caribbean Islands, Australia and many parts of Africa.

## by Vivian De Thabrew

There are several other species of *Eichhornia* notably:

*E. azurea*—In South America and certain parts of tropical Asia.

*E. paniculatus*, *E. paradoxa* and *E. natans*—In tropical South America.

*E. diversifolia*—In certain parts of Africa.

A few years ago I bought a plant called *Lagenandra*. It had broad leaves which were deep green, thick roots and quite tall. I planted this in my tank but it soon rotted away. I haven't seen this plant offered anywhere for sale now. Can you give me any information as to what it was?

I am almost certain that the plant in question was *Lagenandra* and most probably species *lanceifolia*. There are four well defined species all of which are native to India and Sri Lanka.

*Lagenandra* are bog plants and do not survive submerged for too long, and hence not suitable for the aquarium. My article on pages 458-460 in the *Aquarist* journal of March describes the species in detail.

Two plant growers told me that water-lilies cannot be grown in the aquarium by cutting the tuber or rootstock. Then, following your advice nearly three months ago, I separated three growing shoots by cutting the tuber. These, as advised, I planted in another tank, shallow and gradually increased the water as the small plants grew. Now I am delighted to say three very healthy looking water-lily plants have grown to about six inches tall. My question is, will they flower this year? Are there other ways of propagating water-lilies?

I am delighted that you have achieved complete success. The system is not mine, but a universally practised one by botanists and lily-growers all over the world. I am afraid there are some people who believe lilies cannot be propagated this way. But as you have proved yourself this is perfectly easy, provided the species accommodates this. World's largest lily-growers produce many millions of lilies this way.

Some lilies, however, are best propagated by seeds, turions or buds or vivipary. In large scale growing seeds are much easier, as many thousands of seeds are available from one flower. But as there are very many factors which come into play for seed germination, this system is not recommended for

# BREEDING

## *Pelvicachromis pulcher*

by Jørgan Hansen & Pamela Stewart

*Pelvicachromis pulcher* is undoubtedly more well-known under the name *Pelmatochromis kribensis*, which name it has borne for most of the time it has been known in the Western world. The former name may also prove hard to eradicate due to the fact of the fish's having no popular name other than "kribensis."

*P. pulcher* is found in the Niger Delta and other areas of Tropical West Africa. The male attains a length of 10 cm. and the female a length of 7-8 cm. The body is elongate. The basic colouring of both sexes is normally yellowish-brown although the back can change to a dark violet. Two stripes, dark brown occasionally verging on black, run the length of the body, the one along the centre of the fish and the other just beneath the dorsal fin. On each gill plate there is a black spot posteriorly edged by a blue iridescent band about 1-2 mm. in width. There is a reddish-violet patch on the belly which changes in intensity according to the mood of the fish.

The dorsal fin may have one or more black spots in the posterior half and is edged with yellow and, exteriorly, with orange. There may also be dark spots in the upper part of the caudal fin which is likewise edged with yellow and orange. The anal fin may be bluish or violet, while the ventral fins are ruby red.

Apart from the matter of size, the male can be distinguished from the female by the former's fins being longer drawn out, and by the swollen belly of the female when in breeding condition. The colouring of the male is variable from specimen to specimen, while the female's colouring is more constant.

We obtained our first five *Pelvicachromis pulcher* at an auction in the local aquarium club. Strange as it may seem, no-one else was interested, so we acquired them at first bidding. On returning home, we placed our new acquisitions, which were fully grown, in a

50 litre quarantine tank where we subjected them to close observation in the course of the following week. It was soon clear that we had four males and one female. We fished out the female and the most colourful male and deposited them in another 50 litre tank especially prepared for them.

This tank was generously planted with *Sagittaria*. In one of the back corners there was a cave built up with stones, while a flower-pot lay against the opposite side of the tank. The top of the flower-pot faced the glass, but a piece of slate lay across the opening so that the inside of the pot lay in darkness. The benefit of this arrangement was that the slate could easily be removed enabling us to keep an eye on the course of events and, hopefully, photograph the spawning itself. The hole at the bottom of the flower-pot was slightly enlarged to provide easy access by the pair.

After the fish had been fed generously for about a month with mosquito larvae, *Daphnia*, *Cyclops* and dry food, it became apparent that the female was ready to spawn. Her belly was large and swollen and she gleamed with reddish-violet, yellow, black, and orange as she did her utmost to entice the male to the flower-pot. She swam in quick jerks in front of the male, taking on an S-shaped form, her whole body quivering thereafter rapidly to assume the same position but facing the opposite direction, slightly nearer the flower-pot. At first the male seemed indifferent, but later his belly began to alternate between its normal colouring and a deep red, and at one point he ventured into the flower-pot. We observed no more, however, until one morning the female was seen to be distinctly slimmer but as no eggs were to be discovered anywhere in the tank we assumed that a spawning had occurred during the night and that the pair had consumed the fruits of their pleasure.





*P. pulcher* pair with their eggs, spawned in a cave formed by half a coconut shell.

A couple of weeks later the belly of the female was again distended and we determined to keep a more watchful eye upon the pair this time. Unfortunately it then happened that the photographer of the family, engaging in a game of volleyball for the first and last time, broke his right arm which was put in plaster up to the shoulder; a week later the rest of the family departed for a short holiday. No sooner were they dumped on the plane than the happy *P. pulcher* pair began to spawn on the roof of the flower-pot. At this point a certain would-be photographer was not lacking in volubility when he realised that cameras are built in such a way that one presses the trigger

with the right hand, not to mention the necessity of another hand with which to hold the flash.

The impotence of the photographer did not, however, deter the female, who turned belly-upwards and released 5-6 eggs about 2 mm. in diameter and yellow to pale orange in colour. The male then turned upside-down likewise and fertilised the eggs. The pair continued in this fashion until about 60 to 70 eggs adhered to the roof of the pot. The whole process lasted about an hour.

In order to ensure that some fry were secured, the flower-pot with eggs was removed to a small, gently aerated tank which contained used water as it proved



Female full of eggs on day preceding her spawning of 100 eggs.

May, 1977



One of the pair leaving the flowerpot via the hole in the upturned base.

Fred, his large eyes regarding the camera, floats in the pond centre, ever ready to execute a crash-dive.



FRED, the Laughing Frog (*Rana ridibunda*), started life in a dyke on the Romney Marshes where his ancestors had been introduced from Europe back in the 1930's. As a two-year old he was netted from among the duckweed with little difficulty and less enthusiasm because larger specimens were the real quarry. However, with maturity *R. ridibunda* develops a keen faculty for evading capture and the frog-hunter has to be content with juvenile specimens more often than not. This one was later released on the day of his capture in a garden pond in and around which a moderate colony of common frogs (*R. tempo-*

to the time of day. At night he could be found in the water at the pond's edge and in the dark by torchlight was the best way to examine him at close quarters, his timidity during daylight making it almost impossible to approach within yards of him save by stealthily stalking and utilising all possible cover.

A neighbour then decided to build a pond and quickly constructed a very pleasant water garden and Fred wasted no time in sampling its attractions. He soon formed the habit of moving thither just as soon as the sun shifted and offered superior basking opportunities next door. With the passing of

## THE FROG THAT LAUGHED

by L. E. Perkins

*raria*) prospered along with a solitary female edible frog (*R. esculenta*). The garden had once been frogless but by dint of introducing spawn as well as frogs in amplexus some years previously, the foundations of a colony were laid and successive springs had seen the fruitful results of the annual get-together and the chances of a permanent resident community seemed assured.

The summer continued to be sunny and dry and Fred could be seen daily basking at the pond's edge, changing his situation as the sun moved round so that it was possible to anticipate his position by reference

occasional aircraft he would leap into the water and offer a vocal challenge by inflating his air sacs and "laughing" like a diminutive Bullfrog.

The rains then came and fell continuously overnight. Fred was neither seen nor heard for several days and aircraft were able to fly over without opposition. It was then learned that a distant neighbour, investigating a noise coming periodically from her small pond, had discovered a green frog "bag-piping" on and off at all times of the day and night. She it was who, in a moment of maternal anthropomorphism, named him Fred but she it was, too, who





Male fish showing two dark longitudinal stripes. Note large mouth.



Same fish but without dark stripes.

impossible to change water with one arm. We generally incubate cichlid eggs in fresh tap-water.

Two days after spawning the eggs hatched but still hung to the flower-pot roof. By the following day eye pigmentation was present, and on the eighth day after spawning the fry swam freely and brine shrimp were given. Almost 40 eggs from this brood fungused, which was probably due to the absence of fresh water in the hatching tank.

The female died a month later but we used her offspring in a small experiment to ascertain if artificially incubated fish exhibit parental care. The first pair out of the 20 or so remaining offspring was discernible at the age of six months at which point we placed them by themselves in a 70 litre tank well planted with *Vallisneria*, *Echinodorus magdalenensis* and *Anubias nana*. To the left was a cave built with stones, as previously, while to the right was placed half a coconut shell which also formed a cave. It would have been possible to take photos of both these sites but the fish cheated us by spawning on the outside of the cave towards the back glass. They dug a little gravel away from under one of the stones and kept their brood of

about 25 there. The female took charge until the fry swam freely but thereafter the male took over responsibility for all except one. This pair of artificially incubated fish thus carried out their parental role in perfectly adequate fashion.

The 12 remaining fry at the age of 3 weeks are 2 cm. in length and are yellowish-brown with black spots. When someone approaches the tank the male rushes forward and, hovering immediately above his offspring, he jerks from side to side. A moment later one has to scan the landscape thoroughly in order to distinguish the young now pressed against the gravel, which offers a splendid camouflage for their spotted pattern. When the father eventually regards it as safe, the fry are again permitted to swarm about and continue to pick edible items from the cloud of detritus he rakes up for them.

All in all we can say that this fish is a handsome, cave-spawning, monogamous cichlid, which neither touches plants nor digs excessively. It has proved its popularity by being continually available in dealers' tanks and through them in aquarists' tanks throughout the years.

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## COLDWATER QUERIES

*continued from page 46*

**I am going to set up a 24 x 12 x 12 in. tank for coldwater fish. Do you recommend placing any soil in the bottom of the tank?**

I have added potting soil to a tank with considerable success and advise you to try the following method. Get some John Innes potting compost, No. 1, and place it to the back of the tank to a depth of about two inches. Do not let it lay too near the front of the tank. Then cover with an inch of aquarium gravel seeing that all the soil is covered but not allowing it to come up above the front frame. The more

sand or gravel above this means that so much of the completed picture will be blotted out. Set your plants carefully so that the soil is disturbed as little as possible. You will find that the plants will grow well and you should have no trouble in keeping a healthy tank going for many years with just the weekly servicing to ensure that all goes well.

I used the above method when setting up two tanks and they kept in perfect order for seventeen years without having to empty and set up again. The same plants flourished but of course had to be pruned occasionally. The tanks were only emptied when the frames rusted so badly that they flaked like the proverbial pastry.



Yearling hybrids blending superbly with frogbit leaves and duckweed.

later, when the novelty had worn thin, made it her business to trace his recent origins and to return him in a tightly-lidded preserving jar.

Back from the christening, Fred took up the threads of his previous pond-swapping career and everyone became accustomed to his carolling and derived a certain amount of amusement from observing his athletic antics which punctuated his baskings whenever bee, fly, wasp or butterfly was ill-advised enough to pass within range of his powerful leap and unerring tongue.

Autumn came and still the sun shone but Fred's vocal outbursts were fewer and less enthusiastic; and then heavy rain came one night. There followed the expected absence of Fred for it is during rain that he and his kind find conditions for travel to their liking but it was hoped that he had not again sought the pond where the lady's affections had cooled. A night or two later his voice was heard coming from the opposite direction and was traced to the village pond some three hundred yards away. A search from the bank side with a torch and binoculars revealed his head and marble-sized air-sacs breaking the surface out near the island from which safe distance he laughed his derision.

Winter came, gave place to spring and with the approach of summer, the sonorous and lonely call of a Laughing Frog could be separated, by the tuned ear, from the chorus of duck song on the village pond.

The female edible frog was missed at about this time but her disappearance caused no great surprise for there had been a number of rainy nights. And then, in late July, numerous small boys were to be seen during their school holidays, busily catching, they said, "giant tadpoles" and so they were! Fortunately, children can usually be encouraged to undertake "projects" especially when it involves collecting so it was suggested to them that they collect as many of the

tadpoles as possible and to bring them to the garden frogger from whence, when they turned into frogs, they could take to the land with less fatalities than would occur on the village pond's nearby main road.

So it was that several times daily the team of "froggermen" as they called themselves, came trooping up the drive carrying buckets laden with tadpoles which were quickly transferred to the several ponds in the garden. These lads became very interested in the whole project and especially in the history of Fred and said that they would catch him and return him to the garden. With little hope that this endeavour would do more than keep them actively amused, they were sent on their way.

Fred could be heard at frequent intervals and various reports were received of near misses on the part of the froggermen in their attempts to catch him. Then, one Sunday, there was a clamour at the door and a band of excited youngsters were chorusing: "We've caught Fred!" It was a pity to disappoint them but their catch was the missing female edible frog. Their crestfallen looks were fleeting and they soon rallied, promising that Fred's days of complete freedom were numbered and that they *would* catch him.

It was at this point that closer observation of the tadpoles assumed importance for it appeared almost certain that Fred had paired with the female edible frog—a not unknown occurrence but it was important to find out whether, if hybridisation had taken place,



Dorsal view of young male as he sprawls languidly while afloat.



the progeny were likely to be sterile as was generally supposed.

Metamorphosis was rapid and there were soon very many active little frogs sitting around the edges of the pond in heaps enjoying the sunshine. By the end of the summer their average length was around 4 cm., their predominant colour green and the majority carrying a dorsal stripe. Some emigrated to the next door pond and the remainder dispersed among three home ponds. Some were to be seen on occasions after dark throughout most of the mild winter but the ensuing spring found many back in the village pond.

With the coming of the school spring holiday, the froggermen fell a prey to the compulsive attraction of the village pond and they were soon knocking on the door again with their buckets but this time containing frogs so that the garden population of continental frogs was brought up to strength.

The power of the sun increased and the eternal summer of 1976 got into its stride. The high temperatures suited the continental frogs perfectly and they basked in heaps all around the pond edges with frequent and lively disarray at the passing of likely prey. It was now possible to make daily observations and to note differences in size and colouration between specimens. Three or four were considerably larger than their fellows, measuring just over seven centimetres in length against an average length of just over five, and one male in particular indicated his **approaching sexual maturity vocally by responding to the sound of passing aircraft in emulation of Fred who could be heard indulging himself similarly in the distant village pond.**

The continuation of rainless conditions meant that there would be no mass exodus and provided ideal conditions for regular daily study of the community's habits and development with the ultimate mating of at least one male specimen with either a female of his own generation or with the lone, fully mature, female edible frog. The proof comprised a small deposition of spawn in one of the sub-ponds and from the spawn there quickly emerged tiny tadpoles of roughly five millimetres in length. Several dozen achieved frog-hood but the emergence of the tadpoles from the spawn was enough to vouch for fecundity of the hybrid parents the male of which partnership was almost certainly he who became known as Son of Fred.

The froggermen were seen more rarely but turned up in force one evening. They were less excited, more confidently smug and with good cause for the frog floating in their bucket was unmistakably Fred. He had grown considerably and was now a very handsome specimen, dark green with a lime green, wish dorsal strip running from nose to rump. He was carried to the edge of the largest pond, subjected to a final admiring scrutiny from his captors and then gently released into the pond. With powerful thrusts of his hind legs he arrowed through the water gaining

May, 1977



Son of Fred, air-sacs inflated, flaunts his virility by challenging, vocally, a passing aircraft.

depth on his obliquely downward course until the murk of the lower reaches engulfed his image.

Whether or not *R. ridibunda* and *R. esculenta* are distinct species or geographical varieties of the same species can be considered conjectural. That the two species/varieties are sexually compatible with positive issue is, to this student of their behaviour, less debatable.

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## NEEDS AIR

by Hilary Maynard

My 1st is in MARBLES but not in GAME,  
My 2nd is in FRIGHTENING but not in TAME.  
My 3rd is in CLUSTER but not in LUMP,  
My 4th is in TRAMPOLINE but not in JUMP.  
My 5th is in SINNER and also in CRIME,  
My 6th is in STERLING but not in DIME.  
My 7th is in YELLOW and also in BLUE,  
My 8th is in KALEIDOSCOPE but not in HUE.  
My 9th is in FOUNTAIN but not in POOL,  
My 10th is in GREASE-GUN but not in TOOL.  
My 11th is in SIDESTEP and also in TROT.  
My 12th is in MISTAKE but not in BLOT.  
My 13th is in SEEDLING but not in FLOWER,  
My 14th is in SPRINKLER but not in SHOWER.  
My whole might need filtering, to keep water clear,  
But results are well worth it,—for filters aren't dear!

Answer on page 64



# WHAT IS YOUR OPINION?

by B. Whiteside, B.A., A.C.P.

Photographs by the Author



WELCOME TO the 10th anniversary edition of *What Is Your Opinion?*—whether you are a new reader or one of those who have been reading the feature since it began ten years ago. My thanks to the many readers who sent me letters this month; and to the thousands who have written to me during the past ten years. The idea that came to me ten years ago, while glancing at the sob page of a women's magazine in a dentist's waiting-room, has certainly produced a feature that has lasted rather longer than the few months I envisaged originally.

Dr. J. Neville Carrington, managing director of Interpet, the trading name of the Liquifry Co. Ltd. that was formed by Dr. Carrington's father twenty-five years ago, has produced a fine range of heating units, filters, etc.—including the famous Liquifry food—over the years; and he has been one of the most regular readers of and contributors to this feature during its first ten years. Hence I was pleased to receive the following letter from him at Interpet, Curtis Road, Dorking, Surrey. "I am writing to congratulate you on the 10th anniversary of your *What Is Your Opinion?* column in *The Aquarist*. I am an avid reader of this column and I always find the opinions expressed so well edited and of great interest; indeed they help to steer the direction of product development within our company. It speaks well of the concept and of the way in which it is guided that such a feature should still be growing in popularity after so long."

Another frequent correspondent is Dr. D. M. Ford of Aquarian. Dr. Ford is an aquaria scientist working at the Pedigree Petfoods Animal Studies Centre, Freeby Lane, Waltham-on-the-Wolds, Melton Mowbray, Leicestershire. This research unit is the foremost authority in Europe on pet care and nutrition and is housed in a 15-acre farm in the heart of the Wold country on the Leicestershire-Lincolnshire border. Dr. Ford has been a keen aquarist for some 30 years; he is a chartered chemist and food scientist, with higher degrees in the physical chemistry of aqueous systems. For many years he was involved in the development of a wide, popular range of dog and cat foods. With such an unusual collection of qualifications he was the obvious choice to head the team that developed the Aquarian range of fish foods

and remedies for Thomas's—an allied company in the same group. Dr. Ford writes: "Congratulations on ten years of *W.Y.O.* It is most appropriate that such an entertaining column should celebrate its anniversary in a Jubilee year." Incidentally, Dr. Ford runs a free Advisory Service for Aquarian users and, if you are a beginner, you could drop him a line for information about fishkeeping.

Mr. N. J. Pirie, of 38 Bowen Square, Daventry, Northants., has the following to say: "My own belief as to why your *W.Y.O.* feature has been so popular for so long is as follows: because it is readers who write, we don't get bogged down on one subject, as could be the case. There is always something that interests me personally, and keeping fish is personal. Every tropical fishkeeper, marine specialist and goldfish keeper, etc., has his own personal opinion. Constructive comment and criticism have never done any harm. All aquarists are learning. I believe your column—our column—helps tremendously. I always learn a great deal from this feature because readers are never afraid to state the obvious, and for a beginner that is very helpful. My own criticism is that the feature isn't long enough! The photographs aren't very good; but as I have never tried to photograph my fish I had better belt up!" (Your opinions are very fair, Mr. Pirie. I could make the feature twice as long each month—but the Editor, who has the final say, feels that it is already too long. You are certainly entitled to think that my photographs are not very good—but fish photography is a complicated art. I will put forward one comment in my own defence: the photographic reproduction in the magazine in the past couple of months has not been as good as previously: my photographs, which were reasonably bright as original prints, appeared rather dark on the printed page. I hope the situation will improve.)

No. 85 West Circular Road, Belfast BT13 3QB, is the address that heads a letter I received from Mr. and Mrs. D. Overend. Mrs. Shirley Overend writes: "In your feature in the January issue you requested information concerning the transportation of killifish eggs by post. For some time now I have been advertising killifish eggs for sale in *The Aquarist*. I have concentrated on *A. australe*, *A. gardneri*, and the beautiful new species *A. ametti*. I first started



supplying killifish eggs in January, 1976, in the middle of what could be termed as a relatively mild winter. There were no losses from exposure; and those losses that did occur were due to excessively long periods in transit. These eggs were all sent in a small phial wrapped in cotton wool and accompanied by an instruction leaflet. It became apparent that postal delay was the cause of all losses—although I may add that only a very small quantity of eggs supplied suffered in this way. Clients complained that eggs posted in Belfast were taking, on occasions, 22 days to arrive in London. At the same time eggs that were sent to Germany arrived within 48 hours! Aquarists who purchased eggs that suffered in this way were compensated with a free supply.

"There are, of course, other inexplicable events which have no doubt been experienced by all breeders of killifish, e.g. eggs fungus in transit; eggs do not

in the post of up to 14 days, and although these cases were only a small minority it was most disturbing—not only from the financial loss involved but also from the fact that one is always concerned about the loss of eggs or fish in transit.

"Once again I have been surprised to find that the eggs of the three species mentioned appear to be able to withstand abnormal fluctuations in temperature, especially when transferred at the 'eyed' stage. As I have said, there are some grave problems at times with long postal delays on 1st class mail clearly marked FRAGILE and VERY URGENT PLEASE, and bearing in mind that the three species in question normally hatch at approximately 18-24 days it is not surprising that a customer sometimes receives a phial of dead or dying fry.

"On the brighter side there are few problems and I have received quite a number of highly compli-



mentary letters where, according to three of my clients' reports, it appeared that someone had franked the phial and not the stamp! However, the simplest and most honourable way to overcome this problem has always been to supply a batch free of charge.

"I would estimate that approximately 98 per cent of my supplies have been successful—which is even better than I had myself hoped for; and considering the fact that I replaced 'problem' eggs, etc., free of charge, I have the satisfaction of knowing that the success rate for the customer is higher. There were more problems during January 1977, and I am convinced that this was due to the extremely cold weather that has persisted throughout the winter. Clients wrote and explained that the eggs never hatched; but it was interesting to note that they also explained that there had been unwarranted delays

in the post of up to 14 days, and although these cases were only a small minority it was most disturbing—not only from the financial loss involved but also from the fact that one is always concerned about the loss of eggs or fish in transit.

"Once again I have been surprised to find that the eggs of the three species mentioned appear to be able to withstand abnormal fluctuations in temperature, especially when transferred at the 'eyed' stage. As I have said, there are some grave problems at times with long postal delays on 1st class mail clearly marked FRAGILE and VERY URGENT PLEASE, and bearing in mind that the three species in question normally hatch at approximately 18-24 days it is not surprising that a customer sometimes receives a phial of dead or dying fry.

"On the brighter side there are few problems and I have received quite a number of highly compli-

plastic bottles of water, well padded with cotton-wool and bound with Sellotape. On receiving them I followed the instructions, using small show tanks floating in a darkened tank in which to hatch them. For each set of eggs I used  $\frac{1}{2}$  pt. of water taken from a community tank with a pH of 6.8 and a temperature of 74 F. To this I added  $\frac{1}{2}$  drop of methylene blue. Apart from wiping scum from the top of the water every day I did nothing until 21st December when the *A. ametti* were due to hatch. Nothing seemed to be happening so I changed 50 per cent of the water in each tank—and immediately the eggs started hatching and I stood fascinated watching the fry wriggling from the eggs. Within an hour my final total was 11 *gardneri*, three days early, and eight *ametti*. I kept them in the small tank for the ten days allowed, changing about 50 per cent of the water every day

about them and find mine very difficult to feed." (I should point out that Mrs. Ellingford's batches of eggs were purchased as a present for her by her husband. It's some years now since I kept and bred killies—mainly because my local shop has not had any in stock. I must purchase some eggs and try this interesting way of obtaining new stock. Photograph 1 shows one of the last killifish I kept.)

Mr. Brian Banks is 17 years old and resides at 3 Highside Drive, Humbledon Hill, Sunderland. Brian has the following to say: "Although I am an aquarist I am equally interested in herpetology—the study of reptiles and amphibians. I therefore was pleased when I saw that you wanted information about frogs and toads in the aquarium. Very few frogs and toads can be kept safely in a completely aquatic environment. The majority are terrestrial, or only partly aquatic.



with water from the community tank at the same temperature, and keeping up the methylene blue treatment. I fed newly hatched brine shrimps four times per day. I then transferred the fry to a three gallon tank, bare except for necessities, which allows for easy cleaning, to join the two remaining fry rescued from a spawning of opaline gouramies which were the same size.

"Over the next three days I gradually introduced light and started feeding the fry on dried *Daphnia* and a commercial fry food in powder form, which they took readily, as well as brine shrimps. I tried to feed them on micro worms, which they wouldn't take. The fry are now  $\frac{1}{2}$  in. long and all seem to be growing evenly. I look forward to seeing the advertisement in your magazine as I hope to try some other kinds of killies.

"Have any of your readers had any experience with freshwater tropical crayfish? I can find out nothing

Exceptions are the clawed toads—*Xenopus* species, the Surinam toad—*Pipa pipa*, and the paradoxical frogs. The firebelly toads are also very aquatic, but need some access to land.

"Generally it is best to keep amphibians separate from fish. They are often rather prone to feeding on smaller fish and require a good filtration system if the tank they are in is to be kept clean. I have, however, been able to keep the Nigerian clawed toad—*Xenopus tropicalis*—quite safely with young carp, young goldfish and white clouds. They grow to about 2 in. in length and, although rather delicate, have interesting habits. On the whole, however, I would recommend that amphibians be kept in their own tanks, and that their owners find out a certain amount about their pet amphibians *before* they buy them. This can save money and unnecessary suffering to the animals they try to keep.

"I will be interested to hear from other people who



are interested in amphibians and will be willing to give them the address of a reliable company that sells amphibians."

Mr. Gerry Corum is secretary to the Village Bar A.S.—which is a member of the Federation of Northern Aquarium Societies. Mr. Corum, who lives at 81 Barston Road, Oldbury, says: "As you asked for something special to celebrate ten years of W.Y.O. perhaps you would like to know about our society's efforts to make racing tropical fish popular (see 'News from Aquarist Societies'—*The Aquarist*, December 1976, February 1977 and March 1977). Basically it all began when we had fewer members than we have now. Most of them had only one or two tanks and of course, did not stand a chance competitively. So the society decided to do something about this. It was suggested that fish races should be held. The next problem was to decide which variety of fish was most suitable. Everybody at our society has a community tank; the vast majority keep harlequins in them (see photograph 2). So far the most successful owners have been women. Sally Johns won the St. Leger, the most important multi-individual meeting in Britain, and Sandra Morby won the Sandwell 800, the most important meeting run exclusively by our society. I enclose a copy of the H.R.A. rules and regulations. You will probably notice a few loopholes—but these will be tightened up before the world championships in Brighton (see March 1977 issue for details). Perhaps I should enlarge on our society's aims. We are based on three principles. 1. We resist jealousy, whether it comes from inside or outside our society. 2. We have an informal atmosphere at all our meetings, including the A.G.M. 3. Special attention is given to inexperienced aquarists without making them feel inferior. Our formula must be a success because we are unbeaten at inter-society level—although we did not compete at our own open show—and we have given a lot of financial help to neighbouring societies. The reason why W.Y.O. is a success is because of its informal style."

Those people at Edgbaston appear to be having a whale of a time. Is Mr. Corum acting the cod, or is there some fishy or finny business going on when one branch of the Village Bar A.S. meets at a place called Bass House? It sounds an appropriate 'plaice'! Let me quote the Rules & Regulations of the Harlequin Racing Association: "The H.R.A. are (is) a body of aquarists who wish to race harlequins. The A.G.M. is held in Birmingham every December. The insignia H.R.A. is the exclusive right of the Association. 1. The track shall be made of glass or an approved material, with the inside visible to all spectators. 2. The track shall not be less than 500 millimetres long. 3. No race shall take place over a distance of less than 400 millimetres. 4. Each lane must have a width of at least 45 mm. 5. The water must be at least 50 mm. deep. 6. The water

shall be clear; no dyes or additives will be permitted. 7. The maximum length of a racing harlequin (*Rasbora heteromorpha*, *Rasbora hengeli*) shall be 30 mm. 8. The meeting organiser shall appoint a referee. 9. Any fish that is in poor condition or diseased shall be refused entry. 10. A starting gate that gives equal opportunity to all fish shall be erected. The only permitted materials are wood, cardboard or smooth plastic. 11. The finish shall be clearly indicated. 12. The winner shall be the fish that crosses the finish before any other. 13. Any rules or matters that require clarification will be dealt with by the H.R.A. committee. 14. In the event of a dispute the ruling of the president of the H.R.A. shall be final. 15. These rules shall take effect from March 1977, until further notice. 16. These rules may be reproduced provided they are credited to the H.R.A." Thank you, H.R.A., for permitting me to reproduce your rules. Readers who wish to know the supplementary rules for World Championship Meetings should contact Mr. Corum!

Mr. Jeff Hutchings is P.R.O. of the Fancy Guppy Association and sends the following comments from his home at 26 Stanley Croft, Woodplumpton, Preston. "It is with pleasure that I write this letter for the 10th anniversary edition of W.Y.O. This feature has given the hobbyist a chance to air an opinion, or an Association officer, such as myself, to publicise that aspect of the hobby he most enjoys. A number of people who have written to me over the past couple of years have said that many aquatic society members regard the guppy as Oscar fodder only because they breed like mice and often produce poor offspring. This saddens me because this little fish is not as easy a fish as is made out. I will accept that most guppies breed readily; but the development and maintenance of a strain is in many cases fairly difficult. As I have written in *The Aquarist* before, the guppy today is in essence 'man made' in that the breeder is able, in part, to control the genetic material in his strain. The breeder becomes excited as the offspring from a particular mating develop. He is always hoping for a good drop of excellent fish, or something unusual to appear. Characteristics are genetically controlled and interesting fish may occur occasionally.

"The breeder is able to develop his own strain but it is not easy to maintain a standard over a succession of generations. The guppy breeder is always learning about his fish and putting that knowledge to good use. I would like to thank all those guppy enthusiasts who have written to me concerning the Fancy Guppy Association; and I hope that many of you who have not yet joined will do so. 1977 appears to be a year of expansion for the Association with many new members having joined and a new Section opened, i.e. Stockton on Tees. I hope that W.Y.O. will continue to thrive for another ten years and I am sure it will under your capable direction."



No. 43 Rudd Street, Hoylake, Wirral, Merseyside, heads a letter I received from Mr. T. Jones. He wrote: "... What can I say that probably dozens of your readers haven't said already? I know that just over four years ago I started my first ever attempt to keep fish by acquiring two small goldfish, won at a country fair. These, in a very short time, led me to an interest in the more exotic tropical fish and, subsequently, to joining my local aquarist society. It was through the society that I learned about a magazine called *The Aquarist & Pondkeeper*. Naturally I soon became a regular reader and also a much more competent aquarist thanks to your very valuable *W.Y.O.* column. Quite a long time ago, when I met my first set-back, I contacted you by letter and following your advice I overcame my problem.

"Through your feature too I have been in postal

ready. They have stirred a bit but as it seems to have turned a little cooler over the last couple of days I do not think they'll be out for a while yet.

"I have had the female for 3 years and bought the male the following year after five infertile eggs had been laid; but though there have been frequent and noisy matings in hot weather nothing has so far resulted. They are both large tortoises and I think it is essential that one buys this size if one wishes to keep them for more than one summer.

"In reply to your finishing notes I would like to say that the *W.Y.O.* feature is perfect the way it is. It gives us a chance to make contacts all over the country and to express our views and opinions to each other. I would like to take this opportunity to thank the *Readers' Service* for the information they sent me concerning the keeping of scats. All the aquarists I



contact with quite a few brother aquarists, nationwide, and from exchanging ideas and tips I have gained even more knowledge. In conclusion, please accept my thanks for all your help and long may your column flourish because, should it not appear in *The Aquarist*, I'm sure many of us in the hobby would feel we had lost a good friend and a mine of information."

Photograph 3 shows one of my planted tanks—and leads, appropriately enough, to a letter I received from Mr. Stuart Elton, of 19 Cromwell Road, Colchester, Essex. "Congratulations on ten years of *W.Y.O.* I would indeed like to see more photographs in your feature: in particular photos of fully set up tanks always interest me. How about 'Aquarium of the Month?' It's a shame the only colour photos are on the cover or in advertisements; but no doubt this is due to cost. I have checked my tortoises during this mild spell (in March) and placed their box in the garden so that they can come out when they are

know seem to neglect this lovely species. I did come up with some problems. I arranged a 39 in. tank using semi-brackish water as I was instructed; then I set off to buy my scats. I purchased two 4½ in. scats and introduced them into my tank. One scat went to one end of the tank and the other stayed in a cave most of the time. After a few days of good food he came out more often and seemed to settle down pretty well. Then, however, he started to bully the other scat constantly, so I put a separator in the tank; but the battered scat went into a sulk. It refused all food I put in and it eventually died.

"The surviving, healthy scat doesn't bother the inmates—guppies, a puffer fish and a pair of sailfins. I read books about scats before I purchased the fish and the books all state how peaceful the species is. The lone scat now seems happy and is becoming very friendly towards me. It seems to get excited when I look in at it. I would appreciate any further



advice on scats anyone can offer me. Have they been bred in the aquarium and can they be sexed? I would like to hear from anyone who keeps scats. My local dealer insists that it's unnecessary to add salt to the water; but I disagree with him. His scats look unhappy and have dull colouring; it's only fair on the fish to keep them healthy and happy throughout their lives. Thank you for reading my letter. Keep up the good work!" This letter was written by Mr. P. D. Halladay, whose home is at 20 Burleigh Close, Gt. Yarmouth, Norfolk.

Recently a reader asked if anyone knew if one could insure one's fish. Mr. Jeff Hutchings sent me a printed advertisement that reads: "Insure Your Fish . . . A leading Insurance Company is offering cover for your valuable fish as an extension to your All Risk household contents. Would it not be wise to insure your fish at extremely competitive rates against fire, theft and death as a result of accidental damage? Contact: Bravyn Ltd., Insurance Brokers, 27b Church Street, Ormskirk. Tel. Ormskirk (0695) 77418; or 25 Stanley Croft, Woodplumpton, Preston. Tel. Broughton (0772) 864344." This information might be useful to those who keep numbers of expensive fishes.

Mrs. Pauline Hodgkinson, who is P.R.O. of the Northern Goldfish & Pondkeepers Society, writes to me from 291 Plodder Lane, Farnworth, Bolton, Lancs. "In your column in the March edition you ask for opinions on the subject of the state of the coldwater side of the fishkeeping hobby. At the moment breeders of goldfish are preparing for the breeding season. After the winter rest the brood fish will be separated, males from females, and fed well on live foods to bring them into spawning condition. It seems that more and more fishkeepers are now turning to fancy goldfish instead of freshwater tropicals, so popular for the last few years. Perhaps if the trade is to continue importing fancy goldfish from the Orient they will have to take a leaf out of the American importers' book and send detailed drawings of the quality wanted.

"I would like to thank you for giving space, in your February column, to my last letter. Since it appeared our society has gained many new members; and many more have written for details. I feel sure that with so many people showing such interest wholesalers will no longer need to look abroad for coldwater fish but will be able to buy up the British breeders' surplus stock."

It's time to give one of our younger readers an innings now. She is 14 years old Miss A. Cutts, whose home is at 18 Greenside Lane, Hoyland, Barnsley, S. Yorks. Miss Cutts writes: "I am interested in the coldwater side of the hobby. About twelve months ago I progressed from goldfish kept in a bowl on to more serious fishkeeping. I purchased a smallish tank, air pump, filter, air stone and tungsten

strip light. I set up my tank with plants from my local dealer and fish from various sources, e.g. fantails, a shubunkin, a moor, a bitterling and some white clouds acclimatised from tropical temperatures. I fed my fishes on (a popular British food) and dried *Daphnia*, supplemented with live foods. On this diet my fish grew at an amazing rate, and, with the exception of an attack of fungus on my moor, and the loss of a large red fantail soon after purchase, have remained in excellent health. I found the fungus easy to cure with (a fungus cure manufactured by the same company as the popular British food range), following the directions carefully.

"Now my fish are fast outgrowing their tank, so I have decided to advance and have bought a larger, 25 gallon tank. This time I am opting for a fluorescent lighting tube and a U/G filter—which I expect to be more satisfactory than the (small) filter I am using in my small tank. The capacity of the filter is so small that it requires cleaning almost every day. Again with the lights, tungsten bulbs soon fuse—possibly due to water splashing from the air stone. Also, the small pumps do not last long. These smaller, less expensive pieces of equipment are not practical in use as their replacement is almost inevitable sooner or later. An idea I think may interest many of your readers is the use of mirror tiles behind the fish tank. If the joins are concealed by careful planting it gives the appearance of a tank double the size, containing double the number of fishes and plants. Another point to watch is to hide the aquarium equipment by use of rocks and/or the broad leaves of plants such as Amazon swords, ivy leaf *Cryptocoryne*, etc. Would any readers in the Barnsley/Sheffield area be able to supply me with details of where to buy veiltail goldfish, please? I have been trying to get some of these for a long time, but without success." (Do many other readers use dried *Daphnia*—as opposed to freeze dried *Daphnia*? I thought that the former had long since gone out of favour as a fish food with other than beginners. One answer to the short life span of ordinary tungsten bulbs is to purchase Rough Service tungsten bulbs. These last much longer—although they are much more expensive and, eventually, tend to give out less light and more heat than standard bulbs.)

"I noted in your March issue that you were pleased to get letters from the younger members of the fraternity and I hope you still like getting letters from the older brethren," writes Mr. George E. Hann, from his home at Corner Bungalow, Havelock Road, Warsash, Southampton. He continues: "At 75 I am a late starter, but nevertheless very keen and read *The Aquarist* from cover to cover—including the advertisements. I note that you would like a bumper post for your May birthday edition and you can add my letter to the number if you think it contains anything of interest. From time to time there have been



enquiries about scourers to clean aquarium glass. Recently my wife bought a 'Brisk' scourer from Brillo. It is a new yellow plastic scourer, like a pot scourer, but flat—about 4½ in. × 2½ in. and about ½ in. thick. It takes algae off the glass very effectively and can be squeezed out clean with little trouble.

"As an old age pensioner's boy scout good deed I took on the maintenance of our local doctor's surgery tank. I am not proud of the job I do because I have to make special journeys with equipment for cleaning and I have to take care not to make too much mess on the floor. The consequence is that the tank looks a bit neglected. Your suggestion that readers might have plants to spare—or fishes if they are near enough to me—gives me the idea that readers of *The Aquarist* might like to help me in my little charitable effort and let me have their surplus fishes or plants. I would, of course, repay postage, etc. Thinking further on this question, should we not, as keen aquarists, stick our noses into any tanks that we see about that are neglected and offer our help, no matter how amateur we may be? I get a great deal of pleasure from the interest shown in the tank at the surgery by the tiny mites who have come to see the doctor. Their interest in the tank and fish, and in what I am doing and why, is fascinating. Are these the future aquarists of England and the readers of *The Aquarist*? Should we, at this stage, be starting to get them involved in our hobby; or is this an old man's fantasy?"

Although I still have a large bale of letters in front of me, I'm afraid that space permits me to use only one more in this issue. It was written by Mr. P. Chicken, at his home at Lorton Road, Cockermonth, Cumbria. He wrote: "In reply to your request for opinions on *W.Y.O.*, the outstanding feature is the variety of opinions expressed and subjects covered. It is most interesting and informative to obtain other people's views—and agreement or disagreement with these views is unimportant. Then again, we have the variety of people writing in—young and old, novice and expert. All the main aspects are covered: tropical, marine and coldwater. I should think your ratio of photographs is about correct but I would make a plea for a little colour; I know we cannot get away from production costs but we do live in an age of colour films, colour TV, etc., and it remains the only way many of us could appreciate good aquarium lay-outs. Could I make a suggestion for a final paragraph to your excellent feature of, say, six tips that have actually worked and helped readers? One from me would be the growing of many plants outside the aquarium in tubs on a window ledge and transferring as necessary. Hair grass, for example, which I experimented with in an outside pond, grew into an underwater lawn giving me hundreds of free plants for the aquarium and the bonus of an excellent spawning ground for my goldfish.

"Regarding your other queries: (a) U/G filters—

generally accepted as the primary method of filtration; trouble-free; (b) lighting—use fluorescent tubes for long life; trouble-free. I found tungsten tubes did not last long—especially if moved when warm. (c) Aquatic plants—my list would exactly duplicate yours of the February issue; rather interesting when, unlike you, I use U/G filtration and fluorescent lighting. Indian fern would top the list: strong growing; reproduces freely; small plantlets provide top cover; and guppy experts strongly recommend its use. I hope my opinions are of some use to you."

Thank you for contributing YOUR opinions to YOUR feature. I hope you'll continue to do so for the next ten years. My thanks to our Editor, Mr. L. E. Perkins, for his tolerance on those occasions when my copy has arrived late or has been so long that he has had to chop out one or two letters. I do try to keep *W.Y.O.* to a reasonable length each month—but your letters keep on arriving. . . .

For a future issue please send me your opinions on the following: (a) the breeding of dwarf cichlids; (b) the relative merits of separate and combined heater/thermostat units; (c) the cultivation of spatterdocks; (d) the problems associated with the keeping of very large cichlids; (e) the state of the marine side of the hobby; (f) the service provided by your local dealer; (g) the flowering of Amazon swords (plants in two of my tanks have just begun to flower); and (h) your favourite book about the hobby. What is your opinion? I look forward to receiving a letter from you. Good-bye until next month. P.S. I've decided to award the air pump to young Chris Lovell for his tip about providing supplies of earthworms for feeding to fishes. I hope he will find the pump useful.

## SPECIAL ISSUES OF 'The Aquarist'

### COLDWATER—JUNE

Next month's edition of your favourite aquatic magazine will contain articles of particular interest to coldwater hobbyists (including Koi enthusiasts) plus a special section in full colour.

Other sections of the fishkeeping hobby will not be neglected and all our usual features will be incorporated.

### ROYAL JUBILEE

We are currently planning to celebrate Jubilee Year with a 'bumper' souvenir issue to coincide with the British Aquarists Festival to be staged in Manchester during October. Anyone who feels they may have something worthwhile to contribute on this very special occasion is requested to contact this office as soon as possible. Items which are relevant to the hobby in some way, over the past twenty-five years, could be of interest.



# From a Naturalist's Notebook

by Eric Hardy

THIRTEEN amphibians and 47 reptiles are believed to be in immediate danger of extinction in Europe with at least another 18 of the former and nine of the latter in a vulnerable state. It is not just that the future of nearly a third of frogs, toads and salamanders and almost half the snakes and lizards is endangered, but that this is proportionally greater than the endangered birds and mammals on the continent. Yet the latter receive an overwhelming imbalance of funds and public sympathy.

In 1971, some 400,000 Hermann's tortoises were exported from a single European country as pets with less than 20 per cent chance of survival. Between 1968 and 1970, 47 million frogs and tortoises were captured for commercial supply for pets, scientific research or food. In Papua, New Guinea, a commercial crocodile-farm with an annual output of 4,000 skins has started with a pilot project at East Sepik, by the Department of Fish.

## Harmful Chemicals

Seven out of nine chemicals approved for use in or near water in a table included for the first time in the 200-page 1977 edition of the MAFF's *Approved Products for Farmers and Growers* (HMSO, £2) are harmful to fish and need special precautions before use. They are chlorthiamid, dichlobenil and diquat, recommended for floating and submerged weeds; paraquat used to enhance the action of dalapon on reeds, emergent broad-leaved water-weeds and bank-weeds; glyphosate, for water-lilies, reeds and emergent water-weeds; and 2, 4-D used with maleic hydrazide on grass-banks and dyke-plants. Applied to some waters, they could lead to illegal pollution. Many of more than 800 insecticides, herbicides and fungicides it describes for plant-growers could harm fish if drained or wind-blown into fish-pools, though warning notes are added.

## Toads, Lizards and Snakes

Watching natterjack toads feed on small beetles and other insects on our local dunes, I used to think they relied solely upon sight. Hemmer and Schopp, of Mainz University, have shown a part is played by smell too. In Russia, Baranoff and Valetzky have studied the varying body-weight in different geogra-

phical districts of their sand-lizard neighbours. In Israel, Frankenberg, of Jerusalem University, has made interesting observations on the distress calls of geckoes, while American observations have added terms to the predators upon lizards. Our common water-shrew has been shown to prey on newts, by the way. One of the fascinations of lizards is their development of a third or parietal eye. A Colorado University worker reveals that this occurs mostly in high altitude lizards, like agamas and iguanas. It is usually absent from low altitude groups like geckoes and the South American greaved lizards (Teeidae).

The scent-gland secretion of each snake, or related group of snakes, is distinguished by its specific odour. Extraction of the essence of this odour from 25 snakes showed it was composed of a fatty nature, and when examined by thin layer chromatography, each species exhibited an identifiable and reproducible lipid pattern. Even differences in sex and age were identified in some species, and it is now considered that scent-gland fats may be used for more accurate classification of snakes.

Hawksbill turtle-eggs hatched in a Fiji laboratory showed an incubation period of 63 days. At first their nest was kept to room temperature, but this was increased considerably higher during the second half of incubation. The newly-hatched young turtles showed periodic bursts of group activity for their first six days, until they eventually emerged from the sand. An emergence success of 89.24 per cent was the highest known for marine turtles.

## Mouthbrooding Cichlids

Prof. Y. L. Werner of the zoology department of the Hebrew University of Jerusalem, who has made an interesting study of the mouth-breeding cichlid, a tilapia now called *Haplochromis flavijosephi* in his aquarium, tells me of the thriving work at this famous nursery of knowledge where I received much help years ago when studying the fishes of the Jordan Valley and the Dead Sea pools. Prof. Werner has shown that this Tilapia from the Sea of Galilee and local streams in the middle Jordan Valley, often called Joseph's comb-fish, though very similar to the Tunisian species *desfontainesi* differs in colour. It changes colour pattern rapidly from neutral grey with



silvery belly and yellow fin-spots to full courtship bold black stripes, with blue-black facial marks, and pale blue lower jaw, in less than half-an-hour. Both sexes have the same basic colour patterns and can add ten dark grey vertical bars, especially females brooding eggs or fleeing before a male. There is also a hatched pattern occurring constantly and this is darkest when the light is put on suddenly at their community tank early in the morning.



Photo: Prof. Y. L. Werner

*H. flavijosephi*

Only the females in his collection did the mouth-brooding. Certain of the tilapia not only incubate eggs and young in the mouth, but spawning females pick up eggs before the male can fertilise them and, trying to pick up "egg dummies" on the male's spread-out anal-fin near the ground, suck in sperm he has shed as milt on the ground. The male's unique courtship includes swimming backwards to the female, and sometimes a nest-pit is made. Dr. Werner points out that both sexes have completely rounded dorsal and anal fins. Accounts of these being semi-pointed apparently arose from dead specimens with semi-folded fins.

In his community tank they promptly ate some *Capoeta damascina* fish, *Gambusia* and other introduced fish. In his home aquarium where they bred he fed them thrice a day, with one to six meals a week of fresh mosquito-larvae or *Daphnia*, or chopped chicken-spleen; the other times floating dry foods or shrimp-meal substituted live food. Once a month they had chopped boiled spinach. The latter may have developed their taste for eating such aquarium plants as *Hygrophila* and *Vallisneria* as they grew older. Four times he found females brooding eggs between early September and late November, spawning at about 25° C., and incubating in the mouth about three weeks; but in November-December incubation was at 20° C. and lasted some five weeks. 12 to 15 young are reared. A full account of Prof. Werner's observations can be read in the *Journal of Natural History*, 10, p. 669.

### Foreign Introductions

Out of at least 20 foreign freshwater fish introduced to Papuan New Guinea for sport, food, control of mosquitoes of aquaculture, nine have become established. These range from the guppy *Poecilia reticulata*, three-spot giant and snake-skinned gouramis, golden and silver perch, *Tilapia mossambica* and European carp to brown, brook and rainbow trout. There are grass-carp and Javanese carp, catfish and Australian smelt in this astonishing list. *Gambusia* was introduced in malaria control though this is now officially discouraged as being, no more effective than native fish, and much less than DDT. Brook-trout were introduced for sport so recently as 1974. Carp and Tilapia were introduced to alleviate the protein shortage in native diet. The latter flourish in the lower, warmer waters of the Sepik River, but the carp have been less successful. Javanese carp have bred and been raised in a pond fertilized with 360 kg/ha/annum of calcium triple super-phosphate.

### Largest Crustacean

Which is the world's largest freshwater crustacean? This evolutionary achievement goes to the Tasmanian crayfish, *Astacopsis gouldi*, which attains a weight of 3.7kg. and a length of 1ft. The world's second largest freshwater crustacean is another cray, the so-called River Murray lobster, *Euastacus* of Mt Gambier, South Australia, etc. It weights 2-7kg. Our 6 ins. native white-clawed cray is puny by comparison. Size of course is limited in invertebrates by their hard exo-skeleton. Hence they must lag behind giant fishes and reptiles.

Freshwater crustaceans have more interests than just forming food for fishes. The translucent northern ditch shrimp of North America swims always on its back. Part of the time the same applies to many of our nine freshwater shrimps. The ditch prawn, *Palaemonetes varians* is very tolerant of freshwater. Though it inhabits the brackish waters of the Thames estuary creeks, it is apparently absent from the Isle of Man. Its equally transparent relative *longirostris* abounds in Norfolk's Oulton Broad and the River Waveney. The eyes of some of our freshwater shrimps are kidney-shaped. Several relatives are to be found in caves, wells and springs, but the usual hunting grounds for such things are under stones in streams.

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ANSWER TO NEEDS AIR

BITTERLING TANK

THE AQUARIST



# Junior Aquarist

## MY START WITH MARINES

by G. Palmer

LIKE many other tropical-freshwater aquarists, I fell for the beauty of marines and the endless variety of invertebrates. Where does one start with marines? Step one, read some books and articles. This is when the prospect of keeping the fish alive seems daunting. The general opinion is that beginners should start with a tank of no less than 20 gallons capacity. Great! Down to the shop to buy one. At this stage you start thinking twice when you realise the cost of adequate shell, sand, coral, filtration, fish and even salt. I decided to do the next best thing, go down a size. I already owned a 24 in. x 8 in. x 8 in. tank which holds an incredible 5½ gallons excluding rocks, etc. Next problem was adequate filtration for these finicky creatures. Those undergravel things are good, so I got a piece of corrugated plastic that had been lying at the bottom of the garden for years. It was faded and brittle but, never mind, it won't be seen anyway! A wide (½ in. dia.) tube was epoxied to each of what would be the back corners and each of these tubes had an airline tube stuck near the bottom. Using a hacksaw, slots were cut in the corrugated sheet.

The complete filter was placed on the bottom of the tank supported at each end by a strip of foam rubber. A one inch layer of broken shell was laid on top of the filter (about 8 lbs. of the stuff!) and a corresponding amount of coral sand went on the shell. Three pieces of coral were put on the sand and the aquarium was then filled with instant sea (4 whole gallons!) made by a well-known firm in Longford. A small air-pump was connected to the filter, the heater/stat was set to 75° and hey-presto, the whole system works!

Two chemicals were added, one to speed up the maturation of the filter bed and one to produce algae.

Three weeks later the nitrites were still at a dangerous level. Oh well, systems failed after all, but within a few days of thinking this the nitrites fell to practically zero. Great! Down to the shop to stock the tank. Two fish and £8 later the tank was stocked. It

contained a small wimple fish and an electric blue. The books say "When introducing fish turn off all light and leave the fish to settle down for 24 hours." Silly idea; you can't see the things! Within 10 minutes the fish were out of the bag and had five faces staring at them. They settled down very well (the fish and the faces).

The fish were fed a variety of frozen foods and they also received a vitamin supplement. After two weeks I bought them a mate, a Candy shrimp. Although he was a bit shy at first he soon settled in. Mistake one: I was over-cautious about letting food lie on the sand after feeding time. The shrimp got all the spare food and so the fish only ate as much as they got in their five minute feeding time twice a day. As a result the wimple fish died within ten days of the introduction of the shrimp. The wimple fish was feeding well until the day before he died, so maybe there was a supplementary reason. Mistake two: the wimple was replaced by a domino damsel, a small clown fish and a white anemone. The clown fish turned out to be very territorial and would not go near the anemone. It fought constantly with the two damsels and ultimately lost. The tank was then left with one electric blue, one domino, one Candy shrimp, and one anemone. The only change over the last two months has been the appearance of a lot of green algae. There are no nitrites and everything is peaceful. The lighting, by the way, is a 15 watt fluorescent tube on for 12-13 hours a day.

The setting up of this aquarium was not as haphazard as it sounds. Everything was sterilized before use. The sterilizing processes involved only very hot water. No bleach or chemicals were used. The aquarium hood is wooden, eliminating any danger of oxidised metals.

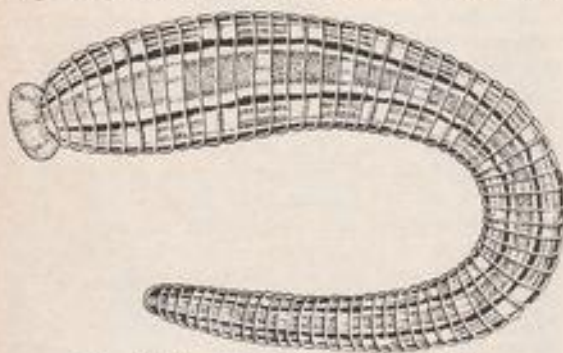
I don't think there was luck involved here. Provided care is taken and you are patient it is relatively easy to keep marines in such a small tank.

# LEECHES

by Huw Collingbourne

Illustrated by Bill Simms

OF THE thirteen species of freshwater-inhabiting leeches (there are also several marine species, but these are seldom found in shallow water) the one which the naturalist is most likely to come across is the Horse Leech (*Haemopsis sanguisuga*). This is rather a different creature from that most famous of leeches, the Medicinal Leech, which was once favoured by the ancient physicians. It is, indeed, much less to be feared, for it is unlikely to take any great interest in probing hands as it will eat nothing larger than



The Medicinal Leech (*Hirudo medicinalis*).

small aquatic animals such as insect larvae, snails and worms which it swallows whole.

The Medicinal Leech (*Hirudo medicinalis*), by contrast, has jaws and sharp teeth which may easily puncture human skin and because of this it was formerly collected in vast numbers for the use of doctors who would apply the little creatures to the body of a patient, believing the letting of blood to be an effective treatment for numerous diverse ailments.

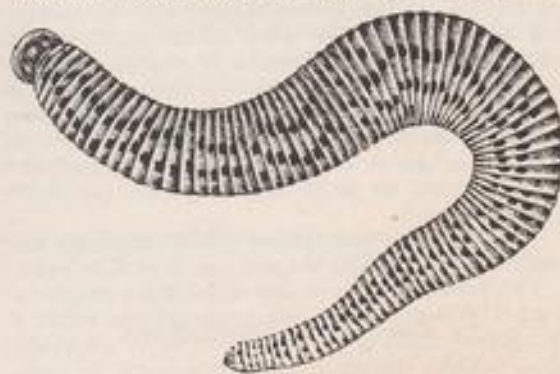
Indeed, so many of these leeches were gathered for this purpose that by the beginning of this century the species was thought to be extinct in Britain, and for some time before that date physicians of the old school had been obliged to rely upon supplies from abroad. Recently, however, the leech has been found to have re-established itself in the New Forest district.

Most of the species which may be easily collected at the present date are likely to live well in aquaria, posing few problems, if any, of maintenance or feeding. Indeed, leeches do not feed often. However, care should be taken to ensure that no parasitic leeches are mistakenly introduced into an already stocked aquarium!\*

Some species of leech will leave the water from time to time and the aquarist must, therefore, be careful to provide a close-fitting lid or, preferably, a cover of finely-woven cloth tied firmly around the top of the aquarium or over an inner lid.

Leeches may be found adhering to stones or weeds in ponds or rivers and may resemble little more than small lumps of green, brown or yellow jelly. Take the stone or weed from the water, however, and you may be surprised to see the lumps of jelly begin to move rapidly over the wet surface on which they are resting.

Their bodies are long and narrow when fully extended and are segmented like the other annelid worms but unlike other worms, leeches possess suckers, one at either end of the body. The hind sucker is large and is immediately apparent whereas the sucker surrounding the mouth is not easily seen. The body is more flattened than those of other worms and there is a number of small eyes on the head,



The Horse Leech (*Haemopsis sanguisuga*).

THE AQUARIST



varying in number from two to ten according to the species.

Most species are marked in some way with stripes and spots upon the dorsal surface and their bodies are often semi-transparent so that, when a light is shone through them, their internal organs may be easily seen and when a parasitic leech has just taken a meal, its victim's blood may be clearly seen inside it!

The skin itself contains pigment cells or chromatophores which contract and expand in response to the varying light conditions. In bright light the cells contract and, chameleon-like, the leech lightens in colour. In dull light the cells expand and the leech darkens in colour.

Of course for most people the best known aspect of a leech's behaviour is its feeding, its apparent vampirism. Indeed, although as I have said the most common British species is not a blood-sucker, it has to be admitted that most varieties are.

The piercing of their victim's skin may be accomplished in one of two ways. The *Hirudidae* leeches (the Horse Leech and others) have teeth and jaws, whereas the *Rhynchobdellidae* leeches rely on a skin-piercing proboscis.

Normally their hosts would be fish, frogs, snails, insect larvae and so on, though certainly many parasitic leeches will not disdain a drop of warmer blood given the opportunity! Once attached to its victim a leech will suck as much blood as it can hold before relinquishing its grip. After a meal it will pass several weeks or months without another, for it takes this period of time for a leech to fully digest and absorb the blood consumed from one victim.

Before leaving the gory subject of a leech's means of sustenance, perhaps it would be worth-while to consider the singular creature, *Theromyzon tessulatum* which, according to Dr. Mellanby (see footnote), is

"said to feed on ducks and other water-fowl, invading the nasal cavities and the throat region, sometimes with fatal results to the birds."

When feeding, a parasitic leech will use its suckers to attach itself to the host animal. However, these suckers have another function too; they are indeed more regularly used as an aid to motion, for leeches move from place to place in a curious looping motion, extending and contracting the body, attaching and detaching the suckers on the substrate of gravel, mud, stones, etc.

Some leeches can swim also and, in a home aquarium, they may be encouraged to do so by detaching them from any solid resting place and throwing them into an area of free water. At once they will begin to swim in a writhing motion, rather like that of a snake.

The breeding behaviour of leeches varies considerably from species to species. As the leech is hermaphrodite all individuals are capable of laying eggs and will do so at some time.

Some types of leech will stick their eggs to stones or weeds and keep guard over them, waving their bodies from side to side ensuring that a constant supply of well-aerated water passes over them.

Others lay their eggs in damp soil at the water-side, while yet others carry the eggs stuck to their bodies. In at least one case (*T. tessulatum*) the parent transports not only the eggs, but also, later on, the newly-hatched brood, clinging to its own body.

\*It is advisable to identify any leech to be introduced into a home aquarium in order to ascertain its food requirements and also to ensure that it will not eat or parasitise any other aquarium occupants. There are several good books available which will enable the aquarist to identify leeches with accuracy. Notable are the books of John Clegg and that of Helen Mellanby entitled "Animal Life in Fresh Water."

## THE SHUBUNKIN *continued from page 41*

be a washed out yellowish-brown and as such have no place in a shubunkin class.

### COLOUR

Some of the shubunkins are seen with a very pale Cambridge blue as a ground colour and although such fish may look very attractive, one with a darker blue is to be preferred. As for the red, this is one of the very important colours as with a good red the fish takes on a much brighter hue than when the supposed red is just a pale orange. The black is also very important and should be quite distinct with no tendency to brown. The amount of red and black on a fish can also be important as if either colour is covering too much of the body the blue will be mostly hidden and the fish will lose much of its attraction.

In breeding the shubunkin it is not always easy to

pair the fish correctly. The best coloured ones do not always produce a goodly number of well coloured fish. It appears that the darker coloured parents are more likely to produce good coloured fish than those which are very pale in colour. One of the better features of breeding shubunkins is that the youngsters are likely to change colour much more quickly than the ordinary goldfish, but those which colour very early and appear almost white are not likely to develop good dark colours and can be discarded when fairly young.

The London shubunkin is shaped like the common goldfish in all respects but its colouring should resemble that of the Bristol. Naturally, the feeding of these fish should be as for normal goldfish and remember that when exhibiting such fish it is most important that the fish is in perfect condition, otherwise it can never get many points for department.



# LARGE FRY FROM A DWARF CICHLID

by Garry Carter

A FEW WEEKS AGO when passing my local pet shop, the owner, with whom I am quite friendly and who knows what fish I require, beckoned me in. On entering I found a tank with about twenty fully-grown *Nannochromis nudiiceps* and I immediately set out to pick a good healthy pair. I had had these fish once before in England some eight years ago but had no luck in spawning them, so this time I was determined to succeed.

The fish, a dwarf cichlid from West Africa, is a bluish-green colour with white on the lower part of the body with a sheen-like effect on its sides. The female is usually the smaller of the two but distinctly more coloured. She also has a permanent gravid look but prior to spawning the belly becomes much more distended. Her ovipositor, unlike other species, is always protruding, even after spawning, but during this process it extends even further. The male is easily recognised by the fact that he is always a larger fish and normally, in a full grown species, has a slight lump on the forehead.

On picking my pair from the shop, I chose a couple which seemed by their actions (typical cichlid mating build-up) to be attracted to each other, but on getting them home and into a tank set up for such an occasion, the male proceeded to "hound" the female, butting her and driving her into the top corner where she was slightly protected by some plants. He continued this action for some hours and finally, by the next day, she looked about all-in so I removed the male and, returning to the shop, exchanged him for another.

On putting the new male back with the original female, an immediate difference was noticed. The female was now doing the advancing, only not in a violent manner and the male made no attempt to dissuade her from this. So at last I thought I was on the right track.

The tank was set up the same way as all my other dwarf cichlid breeding tanks, with small gravel on the bottom to a depth of about 1 inch, a few plants in the front so as to partially cover my movements while working on the other tanks, and a few flat rocks and a couple of 4 inch flower pots laid on their sides. A normal square type corner filter with a peat media

was used. The water had a pH of approx. 6.0 and was slightly acid, kept at a temperature of 29-30°C. and had stood in the tank for two weeks prior to the fish being introduced. Once the pair had settled in, they spent their time swimming together; occasionally the female would go to one of the flower pots and proceed to dig a hole under its side. This went on for several days. By this time the hole was big enough to house both fish but there things stopped and nothing further happened. Then one day, when I decided to clean the glass, I lifted the pot to see if there was anything there. Well, would you believe "nothing at all?" I put the flower-pot back, this time standing it on end, the base at the top, and a notch cut out for their entry. This seemed to do the trick, but not as I expected. The female again doing all the work, proceeded to block off the notch and use the normal small hole in the base of the pot. Two days later there were no signs of the female and the male was patrolling the area around the pot. A further two days passed before I received my first glimpse of her and sure enough, she was a lot slimmer than five days previously. I decided then that, as the female was taking little notice of the male, to leave him in the tank. In fact by the sixth day she was allowing him into the pot. I left them alone, only disturbing the tank to drop in *tubifex* or *daphnia*. After eleven days my patience ran out as both fish had now ceased to go into the pot, and I had been wondering if the eggs or fry had been eaten. I gently lifted and tilted the pot to see eleven young nudiceps still clinging to its side. With this disturbance I thought it better to remove the fry and now, just over four weeks later, they have reached an inch in length. Since then the pair have spawned again but due to having to move house, only four youngsters survived although this time they had just reached the free-swimming stage. The fry, when hatched, are very large, much larger than the fry of a lot of the larger cichlids, and take live brine shrimp readily. Now, in their new home, I am hoping that the pair will make good parents and as I have had this success with nudiceps I am looking for a pair of *Nannochromis dimidiatus* so if anyone has any, and is willing to sell them at a good price, I shall be pleased to hear from them.





# THE MOENKHAUSIA. AN UNDERRATED GENUS

by Phillip J. Brown

THE GENUS *Moenkhausia* was named after a Dr. W. J. Moenkhaus of Indiana University, U.S.A. Although over fifteen species have been described for science, only three have been imported for the benefit of aquarists. They originate from South America—the Guianas, through Brazil to Paraguay. In the main they are hardy and easy to keep, provided their general requirements are met.

In the wild they live in slow flowing to standing water usually well stocked with aquatic vegetation. Both in this state and in the aquarium they are gregarious preferring a shoal of at least four to five fish in large well-planted tanks. They should be kept with fish of a similar size but except for *M. oligolepis* they are generally peaceful. Most specimens will take readily to a normal omnivorous diet, but occasional feeds of live foods is beneficial, especially if breeding is contemplated.

The most commonly seen member of this genus, and the most beautiful, is *Moenkhausia pittieri*, the aptly named Diamond Tetra. Its importation is often sporadic because of the exclusiveness of its natural habitat, Lake Valencia in Venezuela and nearby streams. It reaches a maximum size of about 6cms, the general body colour being a green to brassy yellow. Its common name, however, comes from the silver and gold sparkle of the scales. The male has beautifully elongated milky white dorsal and anal fins, which make it especially distinctive. The female is duller in colour and has a shorter dorsal fin. In both (and in other species) the upper part of the eye is a vivid red.

This fish is exceptionally hardy and long-lived and a shoal makes a flashing distinction to any tank, their sparkling bodies flitting in and out of the vegetation. Breeding is achieved by isolating several pairs in a large tank planted with masses of bushy-leaved plants at a temperature of about 27°C (80°F). For the other species in this genus the water conditions should be soft and slightly acid. With the Diamond Tetra, however, hard, slightly acid water is best.

A high proportion of live foods should be added to their diet to condition them. The parents should be removed once breeding is complete and incubation takes about two days at a temperature of 27°C. The fry can then be raised on the normal *infusoria*, brine shrimp, etc.

The Glass Tetra, *M. oligolepis*, is native to Guiana and the Amazon Basin. It is a much larger fish, reaching 12cms with good care and, once again, a large well-planted tank. It has the typical Characin body shape and is easily recognised by a large black wedge beginning at the base of the caudal fin and extending well back into it. The body is silvery with gold and bluish tints in certain lights, and the scales have a black edge to them. The fins are tinted a pale yellow to pink and the first ray of the ventral and caudal fins are white.

It is suitable for the community tank up to a size of about 8cms, after that it becomes rather boisterous and not to be trusted with smaller inhabitants. Its food requirements are great and must include a vegetable content unless the aquarium plants are not to suffer from its attention. It breeds as outlined above, but in soft and slightly acid water. The female is rather fuller than the male and the anal fin, especially, is somewhat shorter.

The last species can be mentioned briefly for it rarely occurs in importations into this country and has little to commend it apart from ease of looking after and propagation. *M. sanctae-filomenae* is very similar to the Glass Tetra, but is smaller in its maximum size with a deeper body and the caudal peduncle is bright shining gold. It originates from the Rio Paraguay. It seems to share the general attributes of the Glass Tetra and is reported to be easy to breed.

It seems a pity that at least the first two mentioned fish of this genus are not better known to aquarists. The Diamond Tetra in particular provides a touch of the unusual and beautiful in the community tank, and a shoal of these flashing jewels is a sight not easily forgotten.



# PRODUCT REVIEW

**Novita Diatomic Filter.** Manufactured in W. Germany. Available from regular retail outlets or through The Jaynor Organization, "Aqua House," Oak Avenue, Hampton, Middlesex TW12 3PR. £44 plus VAT.

The Novita Diatomic Filter has a clear plastic water container, cylindrical in shape and about 9½ in. tall by 4½ in. across, a top-mounted power-pump housed inside a grey protective case and sufficient inflow and outflow tubing to enable it to be operated at or about floor level (as it should be in any case) without danger of toppling over unless, of course, it is subjected to a vigorous jolt or knock. The motor that operates the pump is rated at the regular 240 volts/30 watts and is as low in noise-level as the soft purring of a contented cat. In a word, it is quieter than most, if not all, of the air- or water-pumps the aquarist is likely to come across at the present day.

Whereas most other power filters are packed with carbon, synthetic fibres and various grades of grit to serve as filter beds, the apparatus under discussion employs diatomaceous earth (known as kieselguhr in the brewing trade, among suppliers of garden swimming pools, manufacturers of once-popular meerschaum tobacco pipes and, at one time, if not now, aquarium air-stones) as a cleansing agent.

One of the surprising facts about diatomaceous earth as a filtering medium is that it holds back much smaller waste products and living organisms as, for example, free-floating algae, than a normal filter bed. Amazingly, the especially selected grade of diatomaceous earth used for this filter even acts as a barrier against such microscopical bodies as the parasites of white spot (*Ichthyophthiriasis*) or velvet (*Oodinium*). Yet for all that it lets through medicaments that will bring about the complete eradication of these and similar-sized pests; for it must be remembered that the right concentration of certain medicaments in the aquarium hastens their demise. In parenthesis it is as well to note that, generally speaking, carbon filtration reduces the potency of drugs and dyes used in the treatment of disease and in most cases renders them entirely innocuous.

To set the Novita Diatomic Filter in action all that is called for is 3 to 5 tablespoonfuls of the special earth (obtainable at all well-stocked aquarium shops) to carpet the floor of the cylinder and a sharp suck on the outflow tubing to set the siphon running. When the cylinder and tubing are seen to be filled with water, the motor is switched on. Immediately this is followed by a few adjustments to three taps inserted into an

H-shaped arrangement of green-tinted tubing jointed to two lengths of rigid untinted tubing. One length terminates in a typical rose-shaped spreader that rains clean water onto the surface. (This results in excellent aeration and beneficial changes in different water levels.) The other rigid and extensible piece of tubing sucks in the water to be filtered through a fine-meshed strainer. Both tubes are held in place by plastic suction discs.

A few moments after switching on the motor, the diatomaceous earth is precipitated onto a filter bag of special weave and construction. Unquestionably crystal clarity is the best way to describe the appearance of the water poured back at high speed into the aquarium.

One hint of advice to those who buy this filter. (And I strongly recommend it for periodical use to all who can afford the price; I say periodical use because there is no necessity to keep it in operation for more than a few hours, if that, a day). All the taps illustrated in the instruction leaflet are depicted in the vertical position. This is the "open" position for the taps located on the two side arms. The vertical position is, however, the "closed" position for the single tap on the short horizontal tube. It is important to know this before putting this filter into operation. The instruction leaflet explains how the position of the taps affects the proper functioning of the filter clearly enough.

Diatomaceous earth is composed of the skeletal remains of countless generations of unicellular organisms laid down in depth on the floors of oceans, lakes and so on when the world was young. During various changes in the earth's surface some of these residual deposits of inert silica have been raised above water level and thus made available for commercial purposes.

A measure of the efficiency of this filter can be obtained from the following. I gave it an initial trial run in a 36 in. × 15 in. × 12 in. aquarium inhabited by a few fancy goldfish and maintained in what I believed was an acceptably clear condition by an outside carbon-and-synthetic-wool filter activated by a good air pump. I removed this filter and installed the Novita Diatomic Filter in its place. Within the space of an hour most of the grit covering the floor had taken on a newly washed appearance and the water looked as transparent as a sheet of clear and dust-free plate glass. (There is provision for an additional inflow tube).



**Es-Es Biological Surge Filter.** Made in U.S.A. Distributed by Armitage Bros. Ltd., Colwick, Nottingham NG4 2BA. £1.75 inc. VAT.

Nowadays under-gravel filters can cost quite a lot of money. It is, therefore, quite a change to come across one that can be bought for well under £2 and takes only five minutes to install. It should perhaps be conceded that the Es-Es Biological Surge Filter is not comparable in performance with the biological or under-gravel filters that cover, or are intended to cover, the entire bottom area of a tank. That said, it may not be generally known that it is not absolutely necessary to have the whole bottom area of a tank turned into a feeding and breeding ground for acceptable bacteria in order to achieve a decrease in waste matter and more wholesome conditions for fish. Indeed, any piece of apparatus designed to suck settled or settling dirt into the interstices of the compost and keep it supplied with oxygen will maintain a high degree of cleanliness. The Es-Es Biological Surge Filter is, in essence, a rigid 6-in. tube about 1 in. in diameter. It is maintained in an upright position in the aquarium by virtue of a wide-based flat surround or flange. Near the closed end of the tube are four vertical lines of holes. Below these a slightly raised and minutely perforated plate forming a narrow water-holding cavity sealed off from the main tube. From the pierced centre of this plate extends a 7-in. non-flexible tube of a diameter slightly less than that of a regular air-line. The filter can be easily placed in or removed from a set-up aquarium without any real disturbance of the furnishings. All that is necessary is to joggle the flanged base about in the grit until the former, and the water-inlet holes, vanish from view. The water level ought to be well above the top of the large tube. Now connect the narrow tube via a length of air-line to an aerator pump. As soon as the pump is switched on air bubbles will rise in rapid succession from the hidden depths of the filter. As



they ascend they both aerate the water and create a sucking action that draws into the grit floating and settled sediment from inches around. It is stated in the instruction leaflet that one Surge Filter will be sufficient for a tank 30 in. x 12 in. x 15 in. I feel certain, however, that two Surge Filters placed towards the rear ends of a 30-in tank would do the job of cleaning water faster and better.

JACK HEMS.

#### OBITUARY

We very much regret to announce the passing of Mr. Frank Tomkins who was for several years a much respected Chairman of The Federation of British Aquatic Societies. Mr. Tomkins who had been ill for some months and was extremely well known as a judge at Open Shows throughout the country will be sadly missed by all his many friends in the hobby.

#### ACKNOWLEDGEMENT

May I take this opportunity of extending to all our many aquarist friends throughout the country my sincere and grateful thanks for the numerous letters, cards, flowers and other expressions of sympathy I have received.

In the days to come I shall look back with satisfaction and pleasure on the many many happy times Frank and I spent with you all.

MURIEL TOMKINS, 25 Kingswear Road,  
London NW5 1EU.







## 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.

IN March the lecture given to the members of the **Northern Goldfish and Pondkeepers Society** on Plants for the Goldwater aquarist, was given by H. Penhall. This interesting and very informative talk was thoroughly enjoyed by all. One part found to be of special interest to everyone was Water lilies and how to get the best results. The possibility of publishing a monthly journal in the near future was also discussed. A committee was elected to take care of the details for the coming coldwater show planned for August to be held in Bolton Lancashire.

Anyone wishing to join the society should contact W. Ramsden 18 Ainsdale Road, Bolton, Nr. Manchester, Lancashire.

A talk on water conditions was given by Mr. Farr-Cox of the Wessex Water Authority at the March meeting of the **Taunton & District A.S.** table show were: Angel fish: 1 and 3, S. Beale; 2, and 4, L. Pincombe. African Lake Cichlids: 1, T. Callow; 2, D. Fleetwood; 3, A. Marlborough. A.O.V. Tropicals: 1, S. Beale. New members are always welcome. The hon. secretary is A. Marlborough, 92 St. Augustine St., Taunton, Som.

AN enjoyable evening was spent when the **Loughborough A.S.** held their annual dinner dance in March. Unfortunately T. Parry the society's main trophy winner and Dr. L. Somerville the retiring chairman were otherwise engaged and so unable to attend.

The trophy winners were: Furnished Aquaria Shield: A. Young. Cichlid Cup: H. Bostock. A.O.V. Catfish Rose Bowl: G. Hower. Livebearer Shield: Dr. L. Somerville. A.O.V. Tropical Plaque: T. Parry. Open Show Shield (most points at open shows): A. Onslow. Chapman Shield: H. Bostock. Rasbores Tankard: J. Booth. Loach Tankard: T. Parry. H. & S. Bostock Shield: G. Taylor. Morgan Trophy: T. Parry. G. & J. Taylor Trophy Fish of the Year: T. Parry.

TABLE Show results at the March meeting of **Bristol A.S.** were as follows: Goldfish: 1, S. Lloyd; 2, B. Bowden; 3, E. Hayes; 4, W. G. Ham. Fantails: 1 and 3, J. Day; 2, H. C. B. Thomas. Orandas: 1, E. Spence. Cichlids: 1, F. Spence; 2, 3 and 4, Miss H. Morgan. Characins: 1, Miss H. Morgan. A subsequent Committee Meeting confirmed an extension of the number of classes at the Open Coldwater Show on 17 Sept. Application for schedules to Hon. Show Secretary, E. N. Bowden, 15 Inns Court Green, Bristol BS4 1TX. Telephone: 0272 661452.

THERE was a larger than usual attendance at the **New Forest A.S.** March meeting held at the regular venue, Community Centre,

Lymington, Hants. Perhaps the attraction was a colour slide lecture from the F.B.A.S. entitled *Collection and Communication* by Ian Sellick. The most interesting aspect was his explanation that a fishes diet can affect its coloration.

The table show results were: Cichlids: 1, N. Galliar; 2, B. Down; 3, J. Menhennett. Catfish: 1 and 2, J. Menhennett; 3, Mrs. Stokes. Rasbores: 1, 2 and 3, P. Wheeler; 4, B. Down. Swordtails: 1, L. Menhennett; 2, Mrs. Stokes; 3, P. Norup; 4, J. Menhennett.

AT the first of two very busy meetings at **Ealing and District A.S.** over the past month T. Glass of Hendon A.S. managed to show over two hundred slides of Killifishes to an interested audience, many of whom were unfamiliar with some of those featured. The second meeting was the first round of the Society's various domestic trophy competitions. It will be interesting to see whose fish survive to complete the year and emerge winner. An influx of new members has added impetus to club meetings and the outlook for the future is more than rosy looking. Meetings are held on the first and third Tuesday of each month at Northfields Community Centre, Northcroft Road, W.13. All welcome.

COMMITTEE members elected at the annual general meeting of the **Wythenshawe and District A.S.** in March were: chairman, A. T. Bolan; secretary, P. Squirrel, 90 Garland Road, Manchester 22; treasurer, S. Bennett; show secretary, D. Carr, 7 Penarth Road, Manchester 22; ordinary members, A. Oldham, P. Crougton, J. Carr, J. Selby, T. Selby.

RESULTS of the **Llantwit Major A.S.** March table show were: Barbs: 1, E. Hillman; 2, J. Edwards; 3, Master A. Fry. K.O.: 1, J. Edwards; 2 and 3, Miss D. Lewis; 3 and 4, Master R. Davies. During the judging there was a talk by Mr. J. Edwards on fish-houses which prompted a lively discussion.

REPORTS from **Bexleyheath and District A.S.** are as follow. Early in February the society had an interesting lecture from A. Noronha on A.O.S. Livebearers with many live specimens. Table show results: A.V. Barb: 1 and 4, G. Greenhalf; 2 and 3, Mrs. A. Greenhalf. Novice Barb: 1, H. Johnson; 2, R. Mitchell; 3, N. Raven; 4, F. Driver. The judge was C. Wood (N. Kent). Also in that month I. Mathison gave an informative talk on filtration, followed by a series of slides. The table show was for Class C (Characins) judged by K. Saxby (N. Kent). Results: A.V. Characins: 1, W. Woodward; 2, R. Yeates; 3, N. Raven; 4, J. Amos. Novice Characin: 1 and 3, N. Raven; 2, H. Johnson; 4, R. Liddiard.

During March **Bexleyheath** entered a Ten Club Interclub and won by the narrowest margin from local rivals Ilrith, with N. Kent and Orpington close behind. For the club meeting the society were treated to an excellent slide show and talk given by R. Roberts on his trip to Sierra Leone. The table show was for A.V. Egg-laying Toothcarps, judged by K. Beadle (Ilrith). Results: 1, 2 and 3, J. Amos; 4, S. Hinson. Novice Toothcarp: 1 and 2, N. Raven. At the second March meeting the

club received a few tips from G. Greenhalf on showing and the table shows were for A.V. Rasbores and A.V. Danio, judged by T. King (N. Kent). Results: Class J: 1, Mrs. A. Greenhalf; 2 and 4, N. Raven; 3, G. Greenhalf. Novice Rasbores: 1 and 2, N. Raven. Class K: 1 and 4, Mrs. A. Greenhalf; 2 and 3, J. Amos. Novice Danio: 1, R. Mitchell; 2, 3 and 4, H. Johnson. New members are welcome. The society meet on the second and fourth Friday monthly. For further details contact Mrs. A. Greenhalf, 149a Broadway, Bexleyheath, Kent. Tel: 01-304 3396.

A new committee was elected at the annual general meeting of the **Saracens A.C.** as follows: chairman, B. Barford; vice-chairman, C. Grimes; treasurer, J. Eaton; secretary, Mrs. J. Barford, 33 Longfield Road, Harpenden, Herts AL5 1QE; show secretary, P. Garner; P.R.O., T. Woolley.

RECENT speakers at the **Portsmouth A.S.** meetings have included Mr. A. Blake of Basingstoke A.S. who gave an interesting slide quiz and Mr. J. Bundell of the G.S.G.B. whose considerable knowledge on the selective breeding and rearing of goldfish revealed itself in his excellent lecture on the subject.

There was a table show for livebearers which incorporated five classes. The results were as follow: Platys: 1, 2 and 3, P. Smithers; 4, E. Binstead. Guppies (male): 1, D. Forse; 2, B. Townsend. Guppies (female): 1, B. Townsend; 2 and 4, B. Binstead; 3, Mrs. Sherman. Swordtails: 1 and 2, E. Binstead; 3, Mrs. Sherman. Mollies: 1 and 2, D. Forse; 3, B. Binstead; 4, B. Townsend. Best Fish in Show: P. Smithers with a platy. The judge for the evening was J. Stillwell.

AN inter-society match was held at the March meeting of the **Oxley A.S.** in the West Midlands League. Four classes were contested and the judge was Mr. G. Noble. Danio and W.C. M.M.: 1, 2 and 3, C. and J. Carrier (Oxley). Characins: 1, Mrs. Croft (Wombourne); 2, C. and J. Carrier (Oxley); 3, Mr. and Mrs. Darbey (Wombourne). Catfish: 1, F. and S. Whitehouse (Oxley); 2, Mr. and Mrs. Darbey (Wombourne); 3, C. and J. Carrier (Oxley). Cichlids: 1, 2 and 3, P. and S. Whitehouse (Oxley). Best Fish in Show went to F. and S. Whitehouse. The match result was: Oxley 21 pts; Wombourne 7 pts. Mr. P. Clements gave an excellent slide show on the African Cichlids of Lake Malawi.

OFFICERS elected at the annual general meeting of the **Midland Association of Aquarist Societies** in March were: chairman, C. Chamberlain; secretary, F. Whitehouse, 68 Oakley Park, Goddall, Wolverhampton, Staffs, tel: Goddall 3884; treasurer, R. Tedds; show secretary, S. Whitehouse; P.R.O., K. Payne; services secretary, G. Hayes; committee members, J. Carrier; Mrs. I. Cox, G. Cox, Mrs. P. Stoddley, R. Cleaver, L. Bradshaw. Any further information can be obtained from F. Whitehouse at the above address.

AT the final March meeting of the **Walthamstow and District A.S.**, Mr. G. Hickman lectured on Rift Valley Cichlids. He explained how to keep and breed them and many slides were shown indicating the different species. Members at the second meeting in March discussed breeding of fish and their different problems. Anyone interested in joining please phone or write to the Secretary, G. Smith, 50 Belle Vue Road, Walthamstow E17. Tel: 01-527 6303.

FOR the February table show of the **Brighton and Southern A.S.** there was a really good show of fish with forty-five fish on the bench. The results were: Guppies (male): 1, R. Collins; 2, Mrs. J. Box; 3, Mr. and Mrs. Sayers; 4, Mr. and Mrs. Ramshaw. Guppies (female): 1, C. Hooper; 2, Mrs. P. Box; 3, Mr. and Mrs. Houghton. Platys: 1, Mr. and Mrs. Ramshaw; 2 and 3, Mr. and Mrs. Sayers; 4, J. Smith. Swordtails: 1, T. A. Nash; 2 and 4, Mr. and Mrs. Hooper; 3, C. Hooper. Mollies: 1 and 2, J. Smith; 3, Mrs. Bridle; 4, Mr. and Mrs. Shankland. A.O.V. Livebearers: 1, Mr. and

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Mrs. Sayers; 2 and 3, Mr. and Mrs. Ramshaw, 4, C. Hooper.

THE March meeting of S.P.A.S.S. was well attended and there was a talk by Mr. D. Seymour on conditioning, spawning and rearing goldfish. Table Show results: Native and Foreign: 1, 2 and 3, Mrs. M. Dudley. Kot: 1 and 2, D. Herman; 3, S. Herman.

AT the March meeting of the Accrington and District A.S. a very enjoyable and informative talk and slide show was given by Dr. D. M. Ford. The lecturer subject on the foundations and preparations of Aquarium Foods and samples were also distributed. The society would like to thank Dr. Ford for his talk. A table show was also judged and the results were as follows: A.V. Tropical: 1, N. Ashton; 2, C. Whitley; 3, J. Howarth. A.V. Coldwater: 1, S. Foote (R.I.S.); 2 and 3, B. Howarth. Pairs: 1 and 3, D. Hargreaves; 2, C. Whitley.

Meetings are held at the new venue, Blockade Hotel, King Street, Accrington, at 7.45 p.m. on the second Wednesday in every month.

TABLE Show results at the March meeting of Prestall T.F.S. were as follows: (L) A.O.V.: 1, P. Busby; 2, Mrs. N. Coombes; 3, M. Davies; 4, R. Mayhew. (E) A.O.V.: 1, Mrs. N. Coombes; 2, 3 and 4, R. A. J. Thomas. (D): 1 and 3, R. Mayhew; 2, G. Betty; 4, Mrs. Harding.

IN February at the first meeting of the Merthyr A.S. the results of the table show for Cichlids were: 1, C. Morgan; 2, E. Morgan; 3, N. Clifford; 4, M. Morgan. During judging a discussion took place between members on the open show which is to be held on 21 May.

At the second meeting the table show was for sexed pairs. Results: 1, N. Clifford; 2, E. Morgan; 3, R. Morgan; 4, T. Sullivan. During the evening advice was given by J. Clifford and other members to new members on showing fish in open shows.

THERE was a very good attendance at the March meeting of the King's Lynn A.S. and members were given a talk and slide show by Dr. D. Ford of Aquarist. He later answered many questions on all aspects of fishkeeping.

Anyone interested in coming along to meetings should contact the secretary Mr. D. Mackay, Telephone: Downham 3010.

MEMBERS and visitors at a recent meeting of the Hounslow and District A.S. enjoyed a talk on catfish given by F.B.A.S. judge Mr. Derek Lambourne. The lecture was accompanied by a slide show, and as each fish was shown on the screen the speaker described the requirements for its well being and the size attained.

The quality of the slides were excellent and Mr. Lambourne was able to show clearly several points which are difficult to see on fish under normal aquarium conditions, and to note small details which distinguish one species from another. Several species in each genus are very similar and it is not easy for the not so experienced aquarist to tell one from the other.

Many of these interesting fish will not breed under aquarium conditions but there are several species that will if given the right care and conditions. Mr. Lambourne has had great success with breeding programmes and taken many awards on the show bench with both breeders' teams and adult fish. Meetings are held at 8 p.m. on alternate Wednesdays at St. Stephens Church Hall, Whitton Road, Hounslow. Visitors are welcome and enquiries should be made to the secretary Mr. H. Parrish 18 The Barons, Twickenham.

COMMITTEE members appointed at the Littlehampton and Bognor A.S. annual general meeting in March were: chairman, J. Walters; vice-chairman, D. Humphries; secretary, R. Mingay; treasurer, D. Gallop; show secretary, P. Burnt.

A full programme has already been planned for the twice monthly meetings which are held on the first Wednesday and third Thursday, 8 p.m. at The Crown, Littlehampton.

THERE were two speakers at the March meeting of the Bournemouth A.S. First of all club member and F.B.A.S. Coldwater judge A. Coombs gave a talk on preparing coldwater fish for the open show, and then after the interval R. Matley (club secretary) spoke on preparing tropical fish for the open shows. It was felt that this was appropriately timed as the open show season is just starting. Table Show results: Owner Bred Pairs (except guppy): 1, Mr. Shuttle; 2 and 3, Mr. Chatfield.

OFFICERS elected at the annual general meeting of the Mid-Herts A.S. a chairman, D. Barfoot; secretary, S. Birch, 7 Station Terrace, Park Street, St. Albans, Herts.; treasurer, R. Romny; show secretary, J. Boswell; assistant show secretary, A. Robins; committee member, M. Mellor. Anyone wishing further information about our club activities contact S. Birch, Park Street 72425.

A talk was given on Vitamins with regard to both humans and fish, by Mr. D. Soper at the March meeting of the Mid-Sussex A.S. The Table Show was judged by Mr. C. Carbon who awarded the cards as follows: Sexed Pairs (Egglayers): 1 and 2, E. and T. Tester; 3, B. Perrin. Sexed Pairs (Livebearers): 1 and 3, J. Smith; 2, E. and T. Tester. Further details may be obtained from Gw secretary, B. Slade H. Heath 53747.

THE annual general meeting of the Associated Goldfish Societies was held in March. In attendance were delegates from Association of Midland Goldfish Keepers, Bristol Aquarist Society, Goldfish Society of Great Britain, Midland Aquarium and Pool Society and Northern Goldfish and Pondkeepers Society. Also in attendance were representatives of the Ichiban Ranchi Society who made application to join this National association. It was explained, to the delegates, that the I.R.S. was a specialist society which catered for the growing number of enthusiasts of the lionhead variety of fancy goldfish. It was unanimously agreed that this application for affiliation to the A.G.S. should be granted whereupon Mr. G. A. Fleming was nominated as their voting delegate.

Following A.G.S. procedure, of rotating chairmen, Mr. A. E. Roberts of M.A.P.S. took the chair. Due to other commitments the secretary, Mr. F. R. Close of M.A.P.S. informed the meeting that he was unable to serve a further term of office. Mr. V. Cole of Bristol A.S. was then elected to serve as secretary/treasurer for the next twelve months. The P.R.O., Mr. F. W. Orme of A.M.G.K., expressed himself willing to serve a further term and he was, therefore, elected for a further period of twelve months.

The delegates agreed to a slight amendment to the Constitution. 1, that Rule 6 should be altered from "Meetings to be held four times during the year" to "Meetings shall be held periodically during the year," the rest of this rule's wording to remain unchanged. 2, Related to an important change in procedure, i.e. Matters for discussion would first be taken back to member societies who would then instruct their delegates how to vote. It was felt that this amendment would assist the G.S.G.B. delegates in particular, especially as, unlike the other groups, they had not been granted a mandate by their society to exercise a freedom to vote.

Resulting from the latter amendment the following proposals were made, for discussion at member society level, on which the delegates would cast their societies vote at the next A.G.S. meeting.

1. (By B.A.S.) That our society is prepared to co-operate in drawing up National Goldfish Standards.

2. (By N.G.P.S.) Is our Society prepared to amend Rule 8 of the Constitution to read, "all decisions shall only be passed if given a majority vote."

3. (By B.A.S.) That member groups should review the British Standard colours, now to hand, and make known their views on their adoption.

4. (By M.A.P.S.) Do member societies agree that the proposed "Ideal Show Guides for Exhibitors and Judges" is correctly named? and do they agree that publication of the above

named standards should result in the discontinuation of the yellow, (International), book of standards?

5. (By M.A.P.S.) Do members agree that standards should be aimed for but not necessarily achieved?

It was agreed that affiliation fees should remain at £5.00 and any goldfish orientated society who wishes to apply for membership, from within the United Kingdom, can apply for details of the Associated Goldfish Societies to the secretary, Mr. V. Cole, 10 Hardwick Close, Brinsington, Bristol BS4 4NL. The next A.G.S. meeting will be held on Sunday, 19th June, at Foleshill Community Centre, Coventry. Commencing at 11.00 a.m.

THE F.B.A.S. publications secretary announces the release of revised size sheets for Cichlid and Tropical Catfish classes.

The popular No. 4 Booklet (Goldfish Standards) is now available again, a reprint having been made necessary due to heavy demand. Ron Forder of Uxbridge A.S. has recently completed a total revision and expansion of Booklet No. 3 (Aquarium Plants) and this should be available shortly. Booklet No. 9 (Dictionary of Common/Proper Names) is now in stock and the backlog of orders for this "best-seller" should now be cleared.

Societies may need reminding of the "free offer" of award labels for their open show—available on receipt of their open show schedule. F.B.A.S. Publications Secretary, Mrs. S. Hedges, 150 Ashburton Avenue, Seven Kings, Ilford, Essex.

#### SECRETARY CHANGE

Barnsley T.F.S.: B. Taylor, 84 Rowland Road, Barnsley, Sth. Yorks.

#### NEW SOCIETIES

A group of enthusiastic fishkeepers have recently formed the New Swansea A.S. Meetings are held at 7.30 p.m. on the first and third Tuesdays of every month at the Commercial Inn, Neath Road, Plasmarl, Swansea. Prospective members are most welcome. The secretary is Mr. E. Leach, 103 Dusan Street, Plasmarl, Swansea SA6 8LJ.

A NEW society has been formed in Leek and the title is the Leek and District A.S. The meeting place is the Leek Town Football Club's Social Club, Hamel Ground, Macclesfield Road, Leek, Staffordshire, and the date of meeting is the last Friday in every month at 7.30 p.m. All aquarists are welcome regardless of age. The secretary is Mrs. A. P. Johnson, 30 Grosvenor Street, Leek, Staffs. Tel: Leek 371278.

#### SHOW CANCELLATIONS

Through unforeseen circumstances it is no longer possible for the Trowbridge and District A. and P.S. to proceed with arrangements to hold an open show.

It is regretted that the Ilfracombe and District A.S. will be unable to hold an open show this year owing to lack of support.

#### SHOW DATE CHANGE

The Village Bar A.S. show which was due to have been held on 6th November, has been cancelled but an alternative date is being arranged.

ON the 28th August the N.G.P.S. will hold its first show at St. James' Church Hall, Bolton. The show will be devoted to coldwater fish and twenty two classes will be catered for. It is hoped to accommodate more than three hundred entries from F.N.A.S. members. In addition to the prospect of seeing many fine fish, visitors to the show will be able to enjoy refreshments.

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varied entertainments and see other features of interest.

**DURING** February, members of the **Port Talbot and District A.S.** travelled to St. Athar to participate in a four cornered competition of which Llantwit Major A.S. acted as hosts. Other opponents were Dow Corning (Barry), and Rhondda A.S. Port Talbot finished runners-up to Llantwit Major. This is a twice-yearly competition, and Port Talbot will be hosts in September.

The Port Talbot A.S. acted as hosts for the first C.N.A.A. assembly of the year, attended by 120 members from eleven member clubs, including Preseli A.S. whose members travelled 86 miles to attend. February was rounded off with another successful annual dinner-dance held at Porthcawl.

During March the club held a table show judged by G. Davies. Class winners were: Egg-layers: J. Egan. Livebearers: R. Perkins. While judging was in progress, Chairman J. Egan gave a talk for the benefit of new members, on starting up the hobby of fish-keeping, and also preparing fish for the show bench.

**DETAILS** of show changes from **Thorne A.S.** are as follows: The open show which is scheduled for 5th June will now be held at the Moorlands Community Centre, Northgate, Moorlands, Nr. Doncaster and not at the Fieldside School as previously stated. Also, the Bring and Buy booked for the 20th May has had to be cancelled due to another society deciding to hold a similar show the same night. This will now be held on Friday 17th June at 7.30 p.m. at the Winning Post Public House Moorlands, Nr. Doncaster. The "Bring and Buy" for 23rd September has also been cancelled for the same reasons.

The attendance at the Wrexham T.F.S. twice monthly meetings has increased substantially as a result of a very successful "Open Night" and a recent recruiting drive, and there is now an average of 35-40 members at each meeting. With new members from as far away as Buckley and Acrefair.

Recent activities of the society have included a film show, slide shows, talks on "How to make an all glass tank" given by club members R. Furneaux and T. Pound, and two talks, "Keeping Tropicals Outside" and "Dose and Dose" of fish-keeping" by R. Mathers, the society's vice-chairman.

Results of recent society shows judged by C. Prichard and R. Mathers were: Guppies: 1 and 3, P. Smith; 2, A. Hopwood. Barbies: 1, P. Smith; 2 and 3, F. Oliver. Corydoras: 1, R. Smith; 2, P. Smith; 3, P. Jones. Rasboras: 1 and 2, P. Jones; 3, A. Hopwood. Swordtails: 1, A. Hopwood; 2, Miss B. Price; 3, P. Jones. Furnished Jaws: 1, E. Jones; 2, W. Beveridge; 3, F. Oliver. Sharks: 1, F. Oliver; 2, P. Jones; 3, A. Hopwood. Platies: 1 and 3, A. Hopwood; 2, Mr. and Mrs. Smith. Minnows: 1 and 3, A. Hopwood; 2, H. Jones. Highest Pointed Jurios: P. Smith; S. Jones; J. Bardley.

**RESULTS** of the **Swillington A.S.** Mini Show were: Guppies: 1 D. Jones (Dearne); 2, Mr. and Mrs. K. Welsh (York); 3, Mr. and Mrs. Smith (Scunthorpe). A.O.V. Livebearer: 1 and 2, Mr. and Mrs. K. Welsh (York); 3, Mr. and Mrs. J. Riley (Castleford). Barbies: 1, C. Goulthorpe (Swillington); 2, Mrs. K. McBride (Aireborough); 3, D. Jones (Dearne). Characins: 1 and 2, J. Britten (Morley); 3, G. Cox (Swillington). Cichlids: 1 and 3, A. Frisby (Hull); 2, J. Britten (Morley). Carps and Minnows: 1, Mr. and Mrs. J. Riley (Castleford); 2, K. Porter (Aireborough); 3, Mr. and

Mrs. K. Welsh (York). Toothcarps: 1, R. Brown (Morley). Siamese Fighters: 1, Mr. and Mrs. Smith (Scunthorpe); 2, J. and S. Greenwood (Swillington). A.O.V. Anabantid: 1, D. and P. Birdsall (Swillington); 2, Mrs. K. McBride (Aireborough); 3, Mr. Copsy (Morley). A.O.V. Catfish and Loach: 1, D. and P. Birdsall (Swillington); 2, G. Britten (South Leeds); 3, P. Smith (Aireborough). Pairs (Livebearers): 1, Mr. and Mrs. Smith (Scunthorpe); 2, P. Smith (Aireborough); 3, D. Parker (Newcastle G. and Livebearer). Pairs (Egg-layers): 1, A. Frisby (Hull); 2, D. Jones (Dearne); 3, J. Britten (Morley). Breeders (Livebearers): 1, J. Brown (Aireborough); 2, D. and P. Birdsall (Swillington); 3, Mr. and Mrs. Freer (Swillington). Breeders (Egg-layers): 1, A. Miller (Ossett); 2, R. Brown (Morley); 3, J. Brown (Aireborough). A.O.V. Tropical: 1, A. Frisby (Hull); 2, D. and P. Birdsall (Swillington); 3, G. Cox (Swillington). Juniors A.V.: 1, Miss S. McBride (Aireborough); 2, Master P. Goulthorpe (Swillington); 3, Master D. Frisby (Hull). Best fish in show: J. Britten (Morley). Best society was Swillington with 20 pts., second being Morley and Hull both with 14 pts.

#### AQUARIST CALENDAR

**1st May:** Hull A.S. Open Show, Blind Institute, Beverley Road, Hull. Schedules available from G. Andrews, 4 Church Mount, Sprotley, Hull. Tel: Hull 811334.

**1st May:** Havant and District A.S. 7th Open Show to be held at The Hoe Green Community Centre, Merchiston Hall, Portsmouth Road, Hornsea. Schedules: H. Armitage, 74 Park House Farm Way, Leigh Park, Havant, Hants. Tel: Havant 73192.

**1st May:** Oram A.S. Open Show at the Oram Social Club Hall, Refuge Street, Shaw, Oldham.

**1st May:** Newcastle Guppy and Livebearer Society International Livebearer Show, Cruddas Park Community Centre, Newcastle 4. For further details of the show please contact Mrs. J. Renton, 146 Chillingham Road, Heaton.

**7th May:** The Port Talbot A.S. "Open Show" will be held at "The Tinbach County Youth Centre," Margam Road, Port Talbot, West Glam. Ample parking space is available. Trophies, Plaques and Cards for all Classes. Postal Entries 5p. per entry, on Show day 10p. per entry. Show Secretary: A. E. B. Fournier, 3 Cross Street, Velindre, Port Talbot, West Glam, SA13 1AE.

**8th May:** Stanley A.S. Annual Show at Stanley Youth Centre. Schedules from A. Howgate, 20 Provident Street, Pelton Lane Ends, Chester-le-Street, Co. Durham. Tel: Beamish 700889.

**8th May:** Bolton Gunners A.S. First Annual Open Show.

**8th May:** Bournemouth A.S. Annual Open Show to be held at Kinson Community Centre, Pelhams Park, Kinson, Bournemouth. Show Schedules and further information from J. V. Jeffrey, 30 Braemar Avenue, Bournemouth, BH6 4JF, Dorset. Tel: Bournemouth 47523.

**8th May:** Warrington A.S. Annual Open Show. The venue will be the Parr Hall, Palmers Square South, Warrington. G. Millman, show secretary, 101 Loushers Lane, Warrington, Cheshire WA4 2RF.

**8th May:** Aireborough and District A.S. Open Show, Menston Civic Centre, Main Street, Menston, Nr. Leeds, W. Yorks. Schedules from G. E. Cuff, show secretary, 31 Oakdale Drive, Bradford, W. Yorks. HD10 0JP. Tel: Bradford 632424.

**8th May:** Lanarkshire/Muirhouse A.S. Open Show, Hamilton Town Hall, Hamilton, Lanarkshire. F.S.A.S. rules. Details from W. Bennett, 15 Coulter Avenue, Wishaw, Lanarkshire, Scotland.

**14th May:** Southend, Leigh and District A.S. Open Show at St. Clement's Hall, Leigh-on-Sea, Essex. Further details will be available in due course from A. Smith, 39 Willow Walk, Hadleigh, Essex. Tel: Southend 555540.

**15th May:** Goole and District A.S. Annual Open Show. Details from Miss M. Coates,

8 Hull Road, Howden, Goole, N. Humberside DN14 7AH.

**15th May:** Gloucester A.S. Open Show will be held at the Chequers Bridge Leisure Centre, Barton Street, Gloucester. There will be 32 classes in all. Trophies for 1st and 2nd, prizes for 3rd and 4th, plus award cards. Schedules will be available from March onwards from Mr. D. Parry, Secretary, 49, Quastalls Way, Longlevens, Gloucester.

**15th May:** The Wynnstay A.S. are holding their first open show this year in the George Edwards Hall, Cefn Mawr, Nr. Wrexham, North Wales.

**15th May:** Towbridge and District A. and P.S. Annual Open Show will be held at the Bradford-on-Avon Rowing Club. Judging will be to F.B.A.S. standards. Show schedules can be obtained from April onwards from S. J. Bowery, show secretary, 13 Dean Close, Meltham, Wilt. SN12 7EZ.

**21st May:** Merthyr A.S. second Open Show to be held at the Catholic Hall, Georgetown, Merthyr Tydfil. For further details please contact G. V. Blackburn, 5 Palm Road, Gurnos Estate, Merthyr Tydfil.

**22nd May:** Merseyside A.S. Annual Open Table Show will be held at the Rainhill Village Hall, Rainhill, Lancs. Hon. secretary: J. Bailey, 11 Auburn Road, Liverpool L13 1JJ.

**22nd May:** Rotherham and District A.S. Open Show at the Town Hall Assembly Rooms, Rotherham. Benching 12.00 noon till 2.00 p.m. Details from show secretary, J. Stanton, 26 Gerard Road, Rotherham, South Yorkshire, S60 2QF. Tel: Rotherham 66716 or 70549.

**22nd May:** Fancy Guppy Association Annual National Open Guppy Show to be held at the Glebe Farm Community Centre, Glebe Farm, Stechford, Birmingham. 37 guppy classes including F.G.A. British Open Championship. Lecture, exhibits, refreshments. Show schedules from C. Beer, 6 Pedmore Close, Woodrow South, Redditch.

**28th May:** Cheltenham Open Show at St. Marks Community Centre, Brooklyn Road, Cheltenham. Show schedules from M. Jenkins, 3 Marlborough Place, Princes Street, Cheltenham.

**28th May:** Cardiff A.S. Open Show at St. Margaret's Hall, Waterloo Road, Roath, Cardiff. Show secretary, D. Brown, 4 Deepener Gardens, Riverside, Cardiff CF1.

**28th May:** British Aquarists' Study Society Second Spring meeting at 2 p.m. in the Meeting Rooms of the London Zoological Society, Regents Park, London, N.W.1. "Catfishes", a series of talks illustrated with colour slides. Tickets £1 from the Treasurer, W. Goodwin, 14 Dawlish Drive, Devon Park, Bedford.

**28th/29th May:** Kings Lynn A.S. Exhibition and Fair at North Runcton Scout H.Q. Near Kings Lynn. Further details from Mrs. S. George, 29 Peppers Green, Kings Lynn. Tel: 671610.

**29th May:** Middleton and District A.S. 6th Open Show. Two shows in one! Tropical Section: 34 Classes. Coldwater Section: 11 Classes. At the Civic Hall, Middleton (M.62—Exit 19).

**29th May:** Corby A.D.A.S. Silver Jubilee. Open Show 30 classes. Civic Centre Corby. Show secretary, D. A. Page, Nutcracker Cottage, 14 Meeting Lane, Burton Latimer, Northamptonshire, NN15 5CS.

**29th May:** Redcar's Fifth Annual Open Show held again at Cotham Bowl, Redcar. Details Redcar 74599.

**29th May:** Bridlington and District A.S. Annual Open Show, at the Hilderthorpe Junior School, Bridlington. Show schedules available from M. Jordan, 86 Matson Road, West Hill Estate, Bridlington, N. Humberside.

**29th May:** Corby and District A.S. Open Show at Corby Civic Centre, George Street, Corby, to celebrate our Silver Jubilee. We offer engraved trophies in each class in a comprehensive schedule, plus many other perpetual trophies. S.A.E. for schedules to: D. Page, 14 Meeting Lane, Burton Latimer, Kettering, Northants.

**4th June:** Weymouth A.S. Open Show at St. Aldhams Church Hall, Radipole. Secretary Mrs. J. Dowell, 37 Sussex Road, Weymouth DT4 6PL.

**4th June:** Weston-Super-Mare Tropical Fish

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Hillside Aquatics London N12



Club Open Show at St. John's House, Oxford Street, Weston-Super-Mare, Avon. Show secretaries, Mr. and Mrs. M. Raymond, 1 The Coombe, Burrington Bladen, Near Bristol.

**5th June:** 1977 Inter-Club Show (Portsmouth A.S.).

**5th June:** Loughborough and District A.S. Open Show.

**5th June:** Thorne A.S. Open Show at the Moorlands Community Centre, Northgate, Moorlands nr. Doncaster. For further details please contact the show secretary, B. Banks, 8, Yorks DN8 4SY.

**5th June:** Accrington and District A.S. Annual Open Show at the Wesley Methodist Church Hall, Blackburn Road, Accrington.

**11th June:** Llanwit Major A.S. Open Show. Schedules available April onwards from J. J. Edwards, "Glanafon", Mill Park, Llanblethian, Cowbridge, South Glam. CF7 7BG.

**12th June:** Newcastle Tropical F.S. Open Show will be held at Cruddas Park Community Centre Westmoorland Road, Newcastle upon Tyne. Further details of the show can be obtained from the Show Secretary T. Marshall, 488 Elswick Road, Newcastle upon Tyne.

**12th June:** Salisbury and District A.S. Annual Open Show. Further details and show schedules from R. F. Adams, 26 Empire Road, Salisbury, Wilts.

**12th June:** Boston A.S. Open Show, Kitwood Girls School, Robinhoods Wk, Boston. Schedules from secretary, Mrs. M. Sanda, 20 Argyle Street, Boston, Lincs. PE21 8PH.

**12th June:** Sudbury A.S. Open Show at the Wasps Rugby Ground, Repton Avenue, Wembley. Schedules from L. J. Brazier, 66 Ormesby Way, Kenyon, Middlesex. Tel: 01-204 5374.

**12th June:** St. Helens A.S. Open Show will be held at the Rainhill Community Centre, Exchange Place, Rainhill, Merseyside. Further details from M. Collins, 26 Vicarage Drive, Haydock, St. Helens, Merseyside WA11 0UG. Tel: St. Helens 22522.

**16th June:** Bath A.S. Open Show at Pitmans Press, Bath.

**19th June:** Redditch Open Aquatic Show. Incorporating the International Herpetological Society Show. Is a knock-out (Redditch Firms), Fair, Bar and Catering. Organised by Deleon A/S at the Abbey Sports Stadium, Birmingham Road, Redditch, Wores. Details: Mr. P. J. Binaley, 25 Plyford Close, Lodge Park, Redditch. Tel: Redditch 26568 Evenings Only.

**19th June:** Swillington A.S. Open Show. Schedules available from P. Campling, 4 Edinburgh Place, Garforth, nr. Leeds. Tel: 88609. Mini-Show on the 15th March.

**19th June:** Whiteway and District F.S. Fifth Open Show at Whiteway Community Centre, Kelson View, Whiteway, Bath. Schedules available after 30th April from Show Secretary, Mrs. E. Daniels, 21 Haycombe Drive, Whiteway, Bath BA2 1PG, Avon.

**19th June:** North West Lancs./Manchester Sixth Annual Open Show. 36 Guppy Classes. Venue and further details from B. Morris (Show Secretary), 4 Irwell St., Burnley, Lancr.

**19th June:** The British Cichlid Association, Hertfordshire Area, invites all interested in cichlids to a lecture, with slides on AFRICAN LAKE CICHLIDS to be held at the Elstree Beechwood Community Association, Manor House, Allum Lane, Elstree (near Elstree and Beechwood Stations). The talk will start at 7 p.m. and the speaker will be M. Williams, J.B.A.S., Lecturer. Refreshments will be available. Further details from R. Harper, Rickmansworth 74504 or M. Hanney, Hoddesdon 61206.

**19th June:** Forfar and District A.S. first Open Show in the Reid Hall, Forfar. This show will be run under Scottish Federation Rules using official Federation judges.

**19th June:** South Shields A.S. Annual Open Show at the Cass Nova Club, Ocean Road, South Shields. This is a new venue from next year.

**20th June:** Newport A.S. Open Show at St. John's Hall, Victoria Avenue, Malinde, Newport, Gwent. Details from show secretary, B. Webster, Glenview, Mount Pleasant, Pontnewydd, Pontypool.

**25th June:** Nailsea and District A.S. Annual Open Show at the Holy Trinity Church Hall, Church Lane, Nailsea, to be held in conjunction with the Donkey Derby. Details from Mr. D. Kenwood, 90 Slade Road, Portishead BS20 5BB.

**26th June:** Dunlop Aquarium Keepers Society Open Show to be held in the Dunlop Factory Canteen, Speke-hall Avenue, Speke, Liverpool 24. Further details from secretary, T. Griffiths, 19 Belfor Street, Garston, Liverpool L19 1RG.

**26th June:** Alfreton and District A.S. Annual Open Show at Alfreton Hall. Details and Show Schedules from P. W. Benson, 10 George Street, Riddings, Derbyshire D15 4GF.

**3rd July:** Chard and District A.S. third Annual Open Show at Furnham School, Chard, Somerset. Details from A. Griffin, 50 Fairway Rise, Chard, Somerset, TA20 1NT. Show schedules available end of April.

**3rd July:** Brighton and Southern A.S. Open Show at Portladye Town Hall, Victoria Road, Portladye.

**9th-10th July:** Romford and Becontree A.S. Open Show, Dagenham Town Show, Central Park, Dagenham. For Show schedules (Agrill), Show secretary, R. Jones, 87 Wood Lane, Elm Park, Essex. Tel: 49 56947.

**10th July:** Scunthorpe and District A.S. Venue to follow.

**10th July:** Lytham A.S. Show Lytham Baths, Dicconson Terrace, Lytham, Lancashire (Same venue as last year). Show Schedules from Show Secretary, Mr. P. Ham, 1 Wyndens Grove, Freckleton, Preston, Lancashire, PR4 1DH. Tel: Freckleton 633182.

**10th July:** Goldfish Society of Great Britain General Meeting, 2 p.m., Small Hall, Conway Hall, Red Lion Square, Holborn, London WC2.

**17th July:** S.E.L.A.S. Open Show at 141 West Greenwich Way, Greenwich High Road, London S.E.10. Details from T. Asquith, 49 Central Avenue, Welling, Kent. Tel: 01-854 1232.

**17th July:** Scarborough and District A.S. Open Show. Further details later. Show secretary J. F. Richardson, 5 Keld Garth, Pickering, N. Yorks YO18 8DG.

**17th July:** Sandgraders A.S. Annual Open Show at Meols Cap School, Meols Cap Road, Southport.

**17th July:** Scarborough and District A.S. Open Show at Gladstone Road Junior School, Wooler Street, Scarborough. Schedules available from J. F. Richardson, 5 Keldgarth, Pickering, N. Yorks YO18 8DG.

**24th July:** The South Humberdale A.S. will hold its second open show at the Memorial Hall, Cleethorpes. Further details from W. Drury, 223 Wellington Street, Grimsby.

**7th August:** Kot East Anglia Open Show, Waveney Fish Farm, Diss, Norfolk. Viewing from 1.30 p.m. Further details from G. Wright, 98 Lower Cliff Road, Goleston-on-Sea. Tel: 0493-68440.

**14th August:** Oldham A.S. Open Show at Wernith Park, Oldham. Information and show schedules can be obtained from A. Chadwick, 341 Broadway, Chadderton, Oldham. Tel: 061-652 0809.

**14th August:** Grimsby and Cleethorpes A.S. Sixth Open Show at the Memorial Hall, Cleethorpes. Batching from 12 noon to 2 p.m. Details and show schedules available from the Show Secretary, I. Curtis, 4 Swaby Drive, Cleethorpes, South Humberdale DN35 9PB.

**20th-21st August:** Third Yorkshire Aquarist Festival at Doncaster Racecourse. Show secretary, Mr. B. D. Chester, 7 Rose Lea, Ordsall, Retford, Notts.

**21st August:** Stratford and District A.S. Open Show at Baile Hill High School, Eccles Old Road, Salford. Details from J. Brown, 18 Royston Court, 72/74 Carlton Road, Manchester 16.

**21st August:** Stroud and District A.S. Annual Open Show at the Subscription Rooms, Stroud. Full tropical classes plus twelve classes for Goldwater. Schedules later from Mr. J. Cole, 13 The Hill, Randwick, Stroud, Glos. 4504.

**21st August:** Macfield A.S. Open Show. Details to follow.

**21st August:** B.K.A. Severnside Group, Annual Killith Show (Incorporated in the

Stroud A.S. Open Show). Seven classes, awards for each class. Subscription rooms, George St. Stroud. Schedules from Mr. J. Cole, 13 The Hill, Randwick, Stroud, Glos. GL6 6JH.

**27th-29th August:** Tyne Tees Association of Aquarist Societies second exhibition of fish-keeping at Lambton Pleasure Park, Chester-le-Street. The Three Rivers Championship will be included in the programme. Further details available at an early date.

**27th August:** The Fourth Welsh National Open Show and Exhibition of Tropical and Coldwater Fish will be held at the Sophia Gardens Pavilion, Cardiff. Further details available from C. Turner, 146 Arran Street, Routh, Cardiff. Tel: 499982.

**28th August:** Long Eaton A.S. Open Show—Details to follow.

**28th August:** Northern Goldfish P.S. First Show at St. James Church Hall, Bolton.

**1st September:** Goldfish Society of Great Britain, General Meeting, 2 p.m., Small Hall, Conway Hall, Red Lion Square, Holborn, WC2.

**4th September:** Castleford A.S. Open Show at the Civic Centre, Castleford. Schedules and information can be obtained from show secretary, F. Holmes, 48 Elmsete Road, Ferry Fyvie, Castleford, Yorks. Tel: Castleford 559485.

**4th September:** Bridgewater A.S. Second Open Show will be held at St. Georges Community Centre. Details from Show Secretary, D. Hilton, 31 Portland Road, Worsley. Tel: 061-790 8106.

**4th September:** Wellingborough Open Show (P.B.A.S.). Venue: Weavers Sport Centre. Show Secretary, A. J. Crew, 67 Swinburne Road, Wellingborough, Northants. Tel: Wellingborough 77131.

**4th September:** Hoylake A.S. Open Show. Venue to be announced later. Secretary, G. Robinson, 24 Heathmore Road, Moreton, Wirral, Merseyside L66 7UN.

**10th September:** Hounslow and District A.S. Annual Open Show to be held at the Youth Centre, Cecil Road, Hounslow, Middlesex.

**11th September:** Harlow A.S. Open Show at Moor Hall, The Stow, Harlow.

**11th September:** Longridge and District A.S. first Open Show at Longridge Civic Hall, Willows Park Lane, Longridge, Preston, Lancs. (15 minutes from the M6). Details available later.

**11th September:** Mid-Cornwall Aquarists Society First Open Show at All Saints Church Hall, Falmouth. Show Schedules available nearer the date from Show Secretary Mrs. M. Hall, 15 Tukes Close, Falmouth, Cornwall.

**17th September:** Bristol A.S. Open Coldwater Show at Bishopston Parish Hall, Gloucester Road. Schedules from Show Secretary, E. N. Bowden, 15 Inns Court Green, Bristol BS4 1TX.

**18th September:** Whitby and District A.S. Annual Open Show at the Spar Pavilion, Whitby. More details at a later date.

**18th September:** Barnley Tropical Fish Society Open Show. Mapplewell and Staincross Village Hall, Darton Lane, Mapplewell, nr. Barnley. Further details from T. Bunfield, 31 Conston Road, Barnley S71 1EL.

**18th September:** Wythenshawe and District A.S. Third Annual Open Show to be held at the Forum, Civic Centre, Wythenshawe, Manchester. Details available from Show Secretary, D. Carr, 7 Penarth Road, Manchester 22.

**20th September:** Aireborough and District A.S. Autumn Mini Show at Greensacres Hall, New Road Side, Rawdon, Nr. Leeds. Schedules from G. E. Cuff, 31 Oakdale Drive, Bradford, W. Yorks. BD10 0JF. Tel: Bradford 632424.

**25th September:** Atlantis Fishkeeping Society First Open Show at the Aintree Institute, Black Bull, Aintree, Liverpool. Schedules will be available later.

**25th September:** Chesterfield and District A.S. Annual Open Show will be held at Clay Cross Social Centre.

**1st October:** The Ichiban Rancho Society National Rancho Open Show, Seymour Hall, Seymour Place, Westminster, S.A.E. for schedule to Mr. F. Hilton, 5 Woolmers Mead, Pleshey (Show Secretary) or ring for details

Bishops Stortford 870395. There will be six classes, with Engraved cups for 1st, 2nd and 3rd, plus Award Cards and Specials.

**2nd October:** Ealing and District A.S. Open Show. Venue to be announced.

**2nd October:** Newbury and District A.S. Open Show to be held at the Corn Exchange, Newbury, Berkshire. Show Secretary, Mrs. Shirley Canning, 6 South End, Cold Ash, Newbury, Berkshire. Tel: Thatcham (0635) 64254.

**9th October:** A.A. Jones and Shipman Aquarist and Pond Society's Second Open Show. Sp entry, trade stands, exhibitions etc. Schedules will be available from M. D. Brainbridge, c/o A.A. Jones and Shipman Ltd., Narborough Road South, Leicester in July.

**15th October:** East London Aquarist & Pondkeepers Association Annual Open Breeders Show, at Ripple Road School, Ripple Road, Barking, Essex. Schedules available from T. Waller, 1 Sparholt Road, Barking, Essex.

**16th October:** North Wilts First Open Show at Swindon. Details later.

**16th October:** Torbay A.S. Open Show at the Torbay Chalet Hotel, Marldon, Paignton. Details from J. Davis, 21 Haldon Road, Torquay.

**23rd October:** Huddersfield T.F.S. (at present provisional date).

**2nd November:** Goldfish Society of Great Britain, General Meeting, 2 p.m., Small Hall, Conway Hall, Red Lion Square, Holborn, London, WC2.

**6th November:** Halifax A.S. Open Show at the Forest Cottage Community Centre Cousin Lane, Illingworth, Halifax. Schedules sent only on request. S.A.E. to: D. Shields "Cobblestones" Gaines, King Cross, Halifax, HX2 7DT, or Ring for details Halifax, 60116.

**6th November:** Blackburn Aquarist Waterlife Society Open Show. Venue at a later date. Secretary, Mrs. Jean Wolstenholme, 39 George Street, Great Harwood, nr. Blackburn. BB6 7JE.

**13th November:** Bradford and District A.S. Open Show at Textile Hall, Westgate, Bradford. Details are available from the show secretary, J. Cornforth, 15 Weymouth Avenue, Allerton, Bradford. Telephone: Bradford 493165.

## ADVANCE NOTICE

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