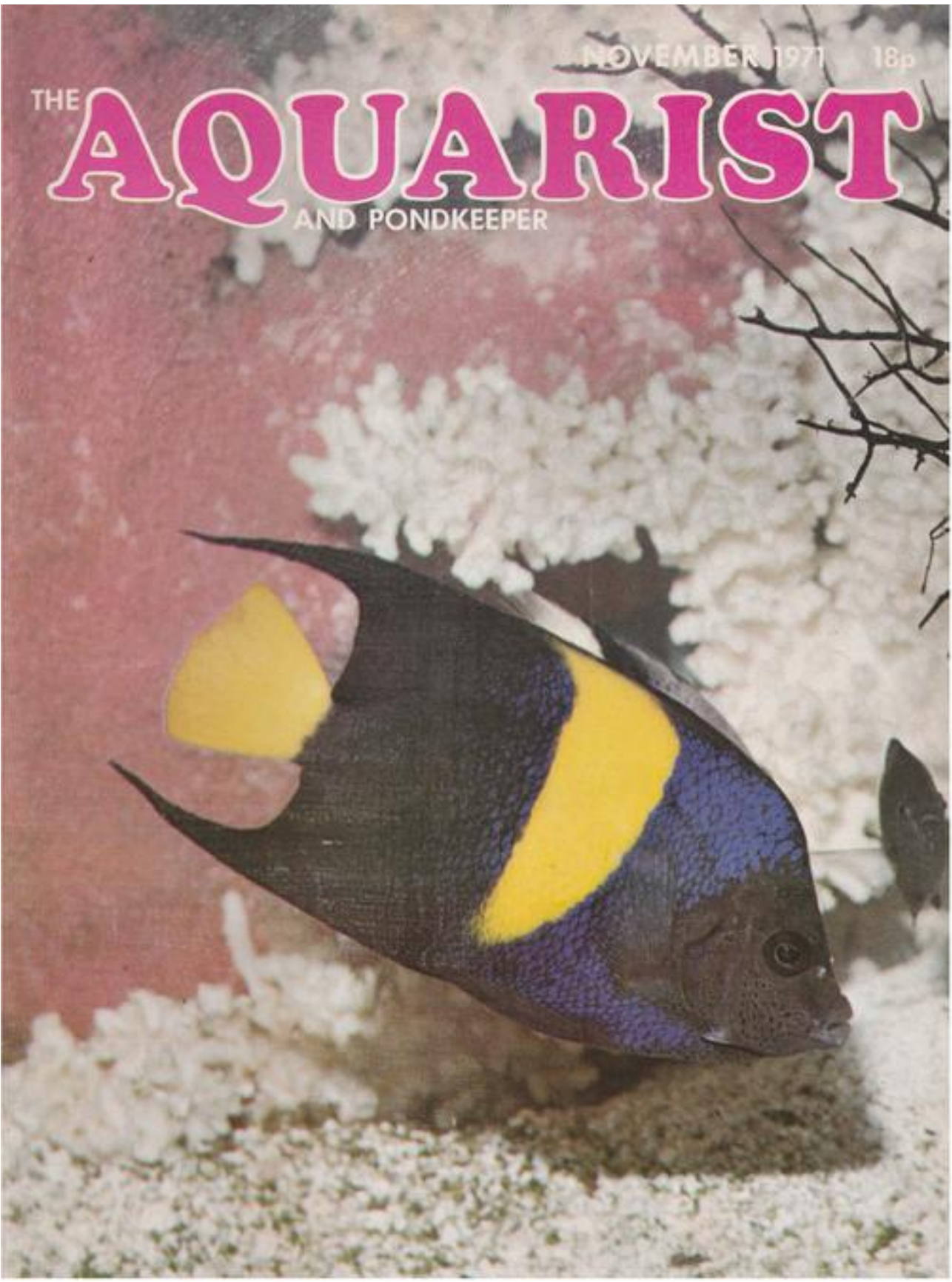


NOVEMBER 1971 18p

THE **AQUARIST**
AND PONDKEEPER





THE AQUARIST

AND PONDKEEPER

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Our Cover

Pomacanthus asfur
Courtesy of SeAquariums Ltd.

The Editor accepts no responsibility for views expressed by contributors.

November, 1971

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IRISH FEDERATION OF AQUARIST SOCIETIES OPEN SHOW

Held at Wellington Hall, Belfast

Report by J. Dunbar

AQUA 71 is the leading event in the aquarists' calendar in Ireland and is organised by the Irish Federation of Aquarist Societies. This year was the third in which the Society has held its open show. The federation were delighted by the way the Belfast public turned up for the show; an attendance of 5,000 people was recorded for the three-day show.

Aquarists from Dublin hired a coach and made the one-hundred mile journey to the show. The main attraction at the show was "Herbert" a 20-inch long Snakehead (*Channa micropeltes*), closely followed by a Black Piranha whose tank was furnished with two skulls which really fired one's imagination as to what damage a shoal of these fish could do. The Snakehead was owned by Mr. A. Sherlock while the Piranha was owned by Mr. D. Morrow.

On show was a record number of 500 fish and the best fish of the show was a magnificent example of a male Blue Acara (*Acquidens latifrons*). All other entrants were of a very high standard. Two fish which really impressed me comprised a pair of adult *Cichlasoma severum*. These fish, especially the male, displayed their best colours throughout the three days of the show.

The two youngest entrants to exhibit were brothers Master D. Robbins, who won the class for large Characins, and Master P. Robbins who was first in the class for Comets and Bristol Shubunkins.

One of the main prizewinners this year was Mr. S. Mooney from Southern Ireland. Mr. Mooney had exhibited some magnificent *Echinodorus radicans* which won first and second in the *Echinodorus* class. He told me that they were grown in his show aquariums at home. The plants were grown in coarse gravel receiving a lot of daylight and Growlux at night. Mr. Mooney won five other first awards for plants and fish.

There were four large trade stands by the leading dealers of Belfast. The dealers had a vast number of fish on sale to the public who, I believe, supported them very well. Also on sale were all the usual

aquarium accessories such as heaters, tanks, plants—you name it, it was there.

The furnished aquaria were a big attraction to the public as they give the uninitiated a glimpse of what a completed aquarium could look like.

The winner for the second year running was



Master Robbins, youngest entrant to "Aqua 71", receives his awards from Mr. Ronnie Hamilton. Looking on, Mr. A. Sherlock, owner of "Herbie".



Mr. S. Mooney (right), publication secretary of the F.B.A.S., receives his prizes from Mr. Ronnie Hamilton.

Mr. Pat Lavery. The driftwood used by some of the entrants was of the most unimaginable shapes and colours and the owners would have found no difficulty in finding new homes for their pieces.

This year the Federation were pleased to welcome the Northern Ireland branch of the National Cactus and Succulent Society, which exhibited a varied and interesting collection of exotic plants, many of which came from the same areas of the world as the tropical fish on show.

There was also an excellent catalogue of the fish on show which opened with a very warm welcome to the show by Convenor Mr. Billy McAuley. An article by Mr. Alf Robbins (one of Ireland's foremost names in aquatic circles) entitled "The discovery of the Neon tetra," told us briefly this small fish's history. A list of the aquatic societies in Ireland and their addresses was also included. I would like to list them here for the benefit of Irish readers who do not belong to a club and would like to join us. Writing to the secretary of whichever club would suit you, will bring a prompt reply, explaining the club's meeting nights and venue:

Bangor: Mrs. C. Carr, 18 Rostrevor Way, Clondeboye Heights, Bangor.

Belfast Tropical: Mr. J. Brown, 65 Graymount Drive, Belfast.

Edenvale (Belfast): Mr. D. Jamison, 20 Vidor Gardens, Belfast.

Newtownabbey: Mr. J. Lambe, Linford Green, Rathcoole.

St. Annes (Belfast): Mr. H. Dunn, 9 Salia Avenue, Carrickfergus, N. Ireland.

Irish Tropical Fish Society: Mr. S. Mooney, 112 Herberton Road, Rialto, Dublin.

The show was brought to an end on Saturday at 5 o'clock with the distribution of awards by Mr. Ronnie Hamilton, of Dungannon.

F.B.A.S. NEWS

THE FEDERATION of British Aquatic Societies announces the setting up of a further three Area Panels of Judges and Speakers; these Panels serve the Welsh, South Midlands and Wessex areas. The aims of these panels will be to promote, and facilitate, the appointment of Judges and Speakers in these areas (to Federation standards) by those best qualified to know the need and judge the ability—the aquarists of the locality and not the central body in distant London. In this way, the affiliated Societies can become more self-supporting and the Federation's services can continue to flourish steadily in those areas where the need is greatest.

A recent addition to the many Federation 'lines' is the 4 in. x 4 in. showjar. These can be obtained

by affiliated Societies at a very favourable price, enabling them to be re-sold at Society level and the profits helping to swell Society funds. Firm favourites this year have been the adhesive 'place' labels used at Societies' Open Shows; these are self-coloured in the appropriate shade according to the 'place' gained, and are also available at competitive prices to affiliated Societies.

The quarterly Bulletin has increased its circulation to 600 copies and the latest total of affiliated Societies stands at 115.

Further details of these services (and many others too) can be obtained from the General Secretary of the F.B.A.S., 35 Steeles Road, London, N.W.3.

WATER LETTUCE

(*Pistia stratiotes*)

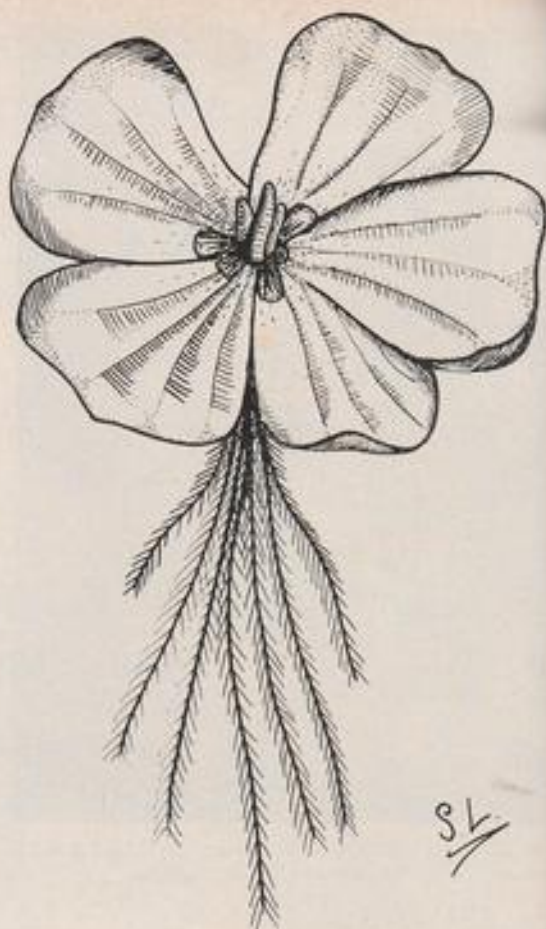
by S. M. H. Loquens

NATIVE to the West Indies and the southern-most States of North America, this highly decorative plant must surely rank amongst the most rapid growing. It is quite possible for plants to attain a diameter of 7-8 inches or more with roots up to 18 inches in length, in a matter of weeks, under conditions of strong sunlight.

The pleasing bright green colour of the water lettuce makes it an asset to almost any collection of aquatic plants. The size of the plant and its floating nature unfortunately rule it out of some home aquaria.

The plant appears remarkably tolerant of a wide variety of water conditions and temperatures. It will be found that growth will take place at temperatures as low as 65° F or as high as 85° F. In spite of this the optimum would appear to be in the region of 70-80° F. Plants produced at lower temperatures obviously grow more slowly and mature later than their warmer counterparts. It will also be found that they are generally stouter, possessing tougher leaves and more robust roots. In some cases these "cooler" plants are of a slightly lighter green, but nevertheless healthy plants. This last variation is probably due to a reduced photosynthetic rate effecting chlorophyll production.

As far as light is concerned, cultivation is best achieved in aquaria that will receive large amounts of overhead sunlight. This requirement is important, as it has been the experience of many, that it will not attain full proportions under artificial light. This statement should not, however, deter aquarists from growing the smaller plants which are equally pleasing. It will also generally be found that when placed under Gro-lux lighting, young plants will rarely reach a diameter of more than a few inches, and appear to be in a constant state of vegetative division. This reproduction is rapid and the young plants that "bud off," quickly cover the surface looking not unlike large salvinia. The plant will behave similarly when under other types of illumination and it appears that only a very high light intensity will produce results that will compare favourably with plants grown under sunlight.



The water lettuce has one other vital requirement necessary for growth, namely humidity. Small plants are not so dependent upon this as larger plants. The large leaf area of the latter appears to make them more liable to wilt should there be a sudden drop in humidity. This will first become apparent towards the tips of the leaves which will lose their turgidity and begin to shrivel. The damage to the plant incurred from this is usually permanent, but providing the humidity does not remain low, new leaves produced will be unaffected. It will therefore be realised that some form of protection against sudden large humidity deficits is necessary, where more mature plants are grown. This is best achieved by ensuring that a cover glass is present over aquaria where larger plants are growing. It may be necessary to lower the water level to prevent partial submergence or crushing of the leaves in this case. As an alternative to a glass cover, polythene can be attached to a frame and then placed over the aquarium. This gives the required humidity as well

as allowing plenty of room for upward growth. Large plants grown under these conditions will flower regularly during the summer months, the small pale yellow flowers appearing low down at the centre of the plant.

An interesting fact concerning the younger plants is that they are almost impossible to place upon the water in an inverted position without them righting themselves. This "self-righting" is made possible by the presence of small silky hairs (trichomes) present on the upper surface of the leaf. When capsized, these hairs trap air between them and increase the buoyancy of the plant. The plant is therefore righted due to this increased buoyancy. These hairs are present at all stages of the plant's growth. Their primary role upon the mature plant appears mainly to be to allow condensation to run off the leaves without collecting, the presence of water upon the upper surface of the plant for any length of time being detrimental.

The beautiful, trailing roots of the water lettuce, as well as being highly decorative, can be extremely useful in the breeding tank. Their dense mass offers an ideal hiding place for the young of livebearers or spawning media for almost any egg-layer. Those species of fish that frequently spawn close to the surface will take particular advantage of them,

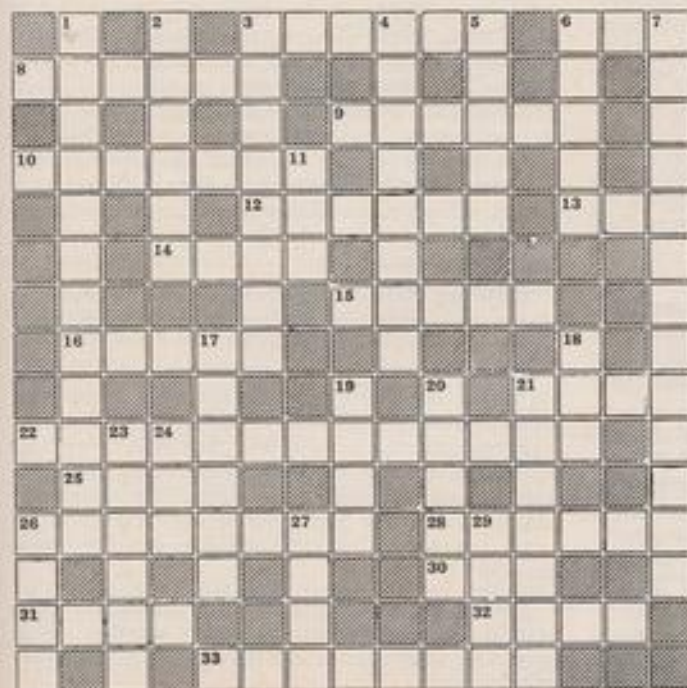
scattering their eggs amidst them. The ease with which the plant with the eggs adhering to the roots, can be removed, is an advantage which cannot be overlooked.

Eggs can thus, if necessary, be moved to more favourable hatching quarters, a task which is not always easy with conventional rooted plants.

For those aquarists who breed the anabantids, the presence of water lettuce in the breeding tank will be found particularly advantageous. The breeders of such species are all too well aware of the ardent courting that can precede spawning and which often results in the flimsy nest being reduced to a few frothy remains. If a few water lettuce are present it will be found that the floating leaves of the plant afford excellent sites beneath which the bubble nest can be constructed. The plants will also tend to stabilize the nest and reduce the possibility of its disintegration during the pre-spawning phase.

With the coming of evening, the leaves will fold upwards, closing like the petals of a flower. This last detail adds to the many enchantments of the plant. It will probably be seen that if a few simple rules are followed, the plant is a very easy one to grow and the aquarist should find little trouble in producing some of these delightful and useful plants to add to his collection.

The AQUARIST Crossword Compiled by M. W. CLARKE



CLUES ACROSS

3. Large flat fish (6).
6. Sphere (3).
8. The place to find marines? (6).
9. Also known as *Anabaris* (6).
10. Tap the tank containing this loach before going out (7).
12. Tusked sealion (6).
13. The humped wild ox of Central Asia (3).
14. You may face one if your fish are not fed for a week (4).
15. The trophy when England play Australia at cricket (5).
16. The best of the brood (5).
21. Portable table (4).
22. Fish suffering the loss of a long love affair? (8, 5).
25. By mouth (4).
26. They are necessary for body building and good healthy fish (7).
28. The aquarist's sporting friend (6).
30. Limb (3).
31. Part of the equipment of 28 across (4).
32. Do fish do this when the lights are off? (4).
33. The general term for the front half of a fish (8).

CLUES DOWN

1. The Red-tailed Black Shark (5, 7).
2. Purifies the water (6).
3. Marks the finish in the parasite stakes? (8).
4. Matadors beware of one when turning away from the bankside (4, 4).
5. There are high and low ones (5).
6. Nature's egg factory (5).
7. *Barbus nigrofasciatus* (5, 4, 4).
11. Small rodent (3).
17. Eggs may become so if they are infertile (6).
18. Fish-breeding may be so especially with difficult species (3).
19. There were dark ones many, many years ago (4).
20. A flower is made up of more than one (5).
21. Does this fish wear a shoulder holster? (7).
23. Rock becomes so as a result of weathering (6).
24. You must do so in order to survive (3).
26. A small hole (4).
27. Tailed frog? (4).
29. Roman Emperor (4).

Solution on page 260



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.

COLDWATER QUERIES

In order to help oxygenate my pond I bought an Oyster pump from a well-known firm. I see that there is a half-inch copper pipe running through it. Will this not be harmful to the fishes?

I cannot understand why manufacturers of such appliances use copper piping. A plastic pipe would be safer and I consider much cheaper. The harmful effects of copper on fishes is well known. A fifth part of copper to a million parts of water are said to be fatal to some fishes. I have had personal experiences of danger to goldfish through the use of copper in ponds. Some people appear to get away with it, but it must be realised that there are one or two considerations to take into account when assessing the danger. New pipes are more dangerous than old ones. If hard or limy water is used the danger will gradually be lessened as the inside of the pipe becomes covered with encrusted lime. Also one must consider the size of the pond and amount of water therein. The larger the amount of water the less will the concentration of copper be. If possible, I suggest that the copper pipe is replaced by a plastic one.

I have this year constructed a pond and stocked it with plants and scaled fantails, calico fantails, moors and telescopic-eyed goldfish. Will these be safe in the pond all the winter or should they be taken inside?

As you live in Exeter it is probable that you can get some severe weather at some time during the winter. It is possible for goldfish to go through the winter in an outdoor pond as long as the water remains pure. If it is at all foul, then when the pond freezes over foul gases may be trapped beneath and the fish can die. The fancy goldfish with flowing or enlarged finnage are the ones more likely to be in trouble during a severe spell. Such fish as veiltails and veiltail moors will be the first to be affected as their fins are inclined to be attacked by fin-rot or congestion. In a fair-sized

by Arthur Boarder

pond those types of goldfish which do not have long finnage will be safe as long as the condition of the water is good.

I have a pond 8 ft. by 4 ft. by 18 in. deep, well-planted with oxygenators. Will my goldfish be safe during the winter or shall I get a heater and, if so, what type?

Your pond is rather small and shallow. Whether the fish will be safe during a severe spell depends on the type of winter we get. One no worse than that of last year may be all right for the fish but if we experience one similar to the one in '62-'63, then it may be a different matter. There are special heaters advertised for the purpose of keeping a small hole open in a pond. This allows any foul gases to escape and lets in fresh oxygen. Do not thin out the water plants which are under-water kinds, as although many of these die down somewhat during the winter, the remainder will afford some shelter for the fishes. Even a 100 watt tank heater will provide sufficient warmth to keep open a small hole and this need only be switched on during very severe weather.

How can I prevent my terrapins from escaping from my pond. I buy them every year but they never seem to stay for long?

Terrapins must have somewhere to crawl on to as they do not like to remain in the water all the time. A small island should be provided in the pond so that they can leave the water at will. It should be realised that these creatures are not suitable for keeping in an outdoor pond throughout the winter. They should be taken indoors from October to March. A small raised ridge around the pond would prevent them from straying.

Please could you tell me if a household bath would be suitable for making a garden pond, and if so what plants and fish should be used for stocking it?

It must not be thought that a bath will make a garden pond. A small pool, yes, if treated correctly. It should be thought of as a tank and not a pond. Do not over-stock with either plants or fish. One the size of yours should not have more than six three-inch fish (over-all). The oxygenating plants can be weighted and dropped into the bath, and Hornwort (*Ceratophyllum demersum*) and *Egeria densa* will be enough kinds of plants.

There is about an inch of black sediment at the bottom of my pond. Should I remove this or will it be safe to leave it for the winter?

I imagine that most garden ponds which have been functioning for any length of time would have some of this black muck at the bottom. Whether it will do any harm depends a great deal on the size and depth of the pond. A certain amount will do no harm but if it is in excess of a fair proportion of the water then it can become harmful, especially if the water freezes over solidly during the winter. If the pond is small I recommend that it is cleaned out when most of the leaves from surrounding trees and shrubs have fallen.

I have a goldfish which has white marks on it. They do not look inflamed and the fish appears to be quite healthy. Is it a disease?

Quite possibly it is not a disease. Usually when a fish is diseased the parts affected will become blood-streaked or the edges inflamed. The white marks are probably just pigmentation. Many goldfish have white or silver markings and it is nothing at all to do with disease. Such fish will keep the silver markings and it is possible that these markings will increase in size as the fish ages, but its health will not be adversely affected.

I have several young orandas. Could I winter them in a thick plastic tank, 22 x 15 x 16 in., in a sheltered spot in my garden? Would this tank be suitable for breeding them in next season?

You will be taking a chance by trying to keep the young orandas out of doors in the tank. In the first place unless you have some form of heating, the water can freeze up and the tank could split. Orandas have a flowing finnage which is always inclined to become affected by fin-congestion and fin-rot. The fish will be safer under cover during severe weather. The tank could be used for breeding purposes for the orandas, but you must realise that unless the parents are removed once eggs are seen, it is probable that they will eat the eggs or young, if any appear.

I have recently discovered some of the goldfish in my pond have blood streaks on their tails. Can I put anything in the pond to cure this complaint?

There is little hope of curing the fish whilst they are in the pond. The fish will have to be caught and

treated away from those in the pond. The salt bath treatment is usually a good cure, but it is unusual to find this trouble with goldfish so late in the summer. I suggest that you catch and examine the fish to see if they are being attacked by any pests, such as Anchor worm or fish lice. To try to treat the whole of the water in a pond just because a few fish are ill, is like dosing all the family because junior has a tummy ache. If salt is put in a pond it is likely to stay there and any amount sufficient to effect a cure would be likely to cause harm to fish and plants in time. I know that it would be an easy way out to be able to put something in a pond to cure ailing fish, but it would not work in practice.

I have kept a pair of Bitterling and some Koi carp in tanks in a garden shed throughout last winter and ice 4 in. thick formed on them. The fish were all right so would they be all safe in an outdoor pond this coming winter?

The Bitterling should be all right in the pond and probably the Koi. They appear to be fairly sturdy or they would not have survived in the iced tanks, my only fear is that as your pond is only 18 in. deep, it may become dangerous in a very severe spell; a lot will depend on the type of winter we get.

I have seen an ornamental pond in a large garden which is under National Trust. In it are a number of golden orfe, but there are no water lilies or other plants to give them any cover. Should this be so and how can the orfe survive?

It is probable that the ornamental pond is kept as a certain feature and no plants are required. No doubt the orfe have been introduced to keep down any mosquito larvae or those of other insects. Orfe are a type of fish which do not appear to be troubled by the lack of shade from water plants as most of the summer days they like to spend cruising about near the surface in the more open parts of the pond.

I have a tank, 4 ft. x 18 in. x 14 in., in which I keep Shubunkins, comets, golden rudd, golden tench and Minnows. I would like to breed the latter and would appreciate any advice on how to go on and when would I know whether they were in breeding condition?

The Minnows would show the white raised tubercles on the males when in breeding condition and they would have the enhanced colour at the throat, becoming very red. You are not likely to succeed at breeding them unless you can reproduce the conditions suitable for spawning. Minnows usually spawn in groups on clean gravelly bottoms of running water, either streams or rivers. You would have to use a large tank and the water would have to be very clear and well oxygenated. You would have to keep up a

fairly strong aeration for the whole time or the fish would not spawn and the fry would not hatch. If you were successful at obtaining any eggs you would have to remove the parent fish or they could eat the eggs or fry.

I have a fibre glass pool in the garden which

I would like to clean out. It is 6 ft. by 4 ft. and 17 in. deep. When is the best time to clean it out?

Wait until some of the plants have died down and then it can be cleaned out. Late October should be about right but it sometimes depends on the season. When most of the leaves have fallen is the best time to carry out any pond cleaning.

TROPICAL QUERIES

by Jack Hems

I should appreciate some information on the general care and breeding procedure of the dwarf sparkling gourami.

I suppose you mean *Trichopsis pumilus*, with metallic red, green and blue spots on the body and fins. This species flourishes best in long-standing water with plenty of plants to afford cover. It is a bubble-nest builder, but according to Professor Sterba, it will occasionally breed direct on the bottom.

What size tank would make a satisfactory home for a pair of *Rivulus cylindraceus*? Furthermore, what temperature is best for keeping and breeding this species?

A tank about 18 in. long would be large enough for a pair of *R. cylindraceus*. Plant it with nitella or one of the miniature bladderworts to provide hiding places for fry. A temperature of about 72°F (22°C) to 75°F (24°C) is best.

I always top up my aquarium with water drawn straight from the tap. When I mentioned this in the hearing of another aquarist he turned and said I was lucky I had not killed some, if not all, of my fishes before now. Please let me have your opinion on this matter.

The sudden introduction of cold water into a tropical aquarium is enough to damage the health, temporarily or permanently, of most species of warm-water fish. That your fishes have survived such treatment is fortunate indeed. Discontinue the practice before you run into trouble.

What information can you give me about freshwater flounders as tropical aquarium inmates?

The best known aquarium flounder or sole is *Achirus fasciatus*, from the east coast of North America. This fish flourishes best in brackish water and is happy enough at a temperature in the middle sixties to the middle seventies (°F). Acceptable foods include worms of various kinds, tiny pieces of meat or shell fish and guppy fry. *A. fasciatus* should be

housed in a tank with a fine sandy bottom into which it likes to burrow up to its eyes. Of recent years other flat fish have come into this country from South America. Among these is at least one species that lives its entire life in salt-free water. Soles or flounders are best kept out of a community tank. As they increase in size (up to 6 in. and more) they are apt to attack other fish.

I think I have a true pair of blind cave fish. Would it be possible to breed them (and how) in a two-foot tank?

If you mean the blind characin (*Anoptichthys jordani*), then the answer is yes. Layer a small aquarium with marbles or well-washed pebbles and see that the water is clear. You will know when the fish are about ready to spawn by the bloated sides of the female and the excitement of the male. The eggs are scattered and will sink into the interstices of the stony bed. Even so, remove the egg-eating parent fish as soon as spawning is over. Incubation of the eggs takes about three days. The fry are no great problem to raise, for they will take flour-fine dried food, infusorians, micro worms, and the like.

Would it be all right to keep a few baby shubunkins I have removed from my garden pond in my balanced tropical tank until I can find alternative accommodation for them?

Provided the introduction of the shubunkin fry will not rob the other fishes of too much oxygen, then all should be well. But remember that baby shubunkins will stir up the bottom as much as bottom-disturbing catfish and their growth in warm water will be very rapid.

Please tell me the best way to keep the black-banded sunfish and breed it successfully?

The black-banded sunfish (*Mesognistus chaetodon*) thrives best in clear neutral to acid water kept at a temperature of from about 62°F (17°C) to 75°F (24°C). It demands live food such as *Daphnia*, tiny worms, mosquito larvae, and the like, though occas-

sionally the odd fish can be persuaded to accept dried food. It likes plenty of plants and good light. Sexing is not easy, but a female in breeding condition shows distended sides and more colour than the male. The ardent male fans a depression in the sand and the female lays her eggs in this. The male protects the eggs against molestation and the female usually stays most of the time behind the plants. The eggs hatch in about four days and the fry become free-swimming a few days later. They must be given infusorians for the first week or so, followed by micro worms, brine shrimps, and other minute forms of life.

What is a skunk corydoras and is it as peaceful and hardy as other members of its genus?

The formal name of the skunk catfish is *Corydoras arcuatus*. Years ago it was popularly known as the arched corydoras on account of the black band that extends, like the dark marking on a skunk, from the head to the tail. *C. arcuatus* is peaceful, does not exceed two inches and is only slightly less hardy than *C. paleatus* or *C. aeneus*.

Can *Rasbora trilineata* be bred in the home aquarium?

R. trilineata can be bred but not always to order. The sort of aquarium most likely to trigger off a spawning would be filled with soft water of an acid nature maintained at a temperature in the upper seventies. The female lays her eggs among thickets of feathery plants.

My lyre-tailed mollies are being bullied by my tiger barbs. What can I do to stop this bad behaviour?

Separate the two species at the earliest opportunity. Tiger barbs are compulsive chasers and fin-and body-nippers and you cannot alter this behaviour by admonishing them.

I am interested in acquiring a pair of *Haplochromis burtoni* and would like to know something about their care and breeding habits in a small aquarium.

An aquarium furnished in the usual way suits this species. It is no problem to feed because it will take dried, live and green foods. It can be a nasty little bully and breeds quite readily in the manner of other haplochromis species. The male displays fine colours every so often and always when it is in breeding condition.

I believe I have a long-nosed knife fish. It is minus a dorsal fin and caudal fin but has a ribbon-like anal fin that extends the entire length of the body. The general coloration is a sort of transparent silver with a dark stripe along the centre of the sides. Please tell me the scientific name of this fish, where it is found in the wild state, its maximum size and habits and preferred food.

Your description does seem to tally with what is popularly known as the long-nosed knife fish (*Gymnorhamphichthys hypostomus*). This species is widespread over most of South American north of Argentina and probably (in the wild state) reaches a length of about a foot. It is said to be a non-aggressive fish but well-grown ones will make a meal from much smaller fishes. A temperature in the neighbourhood of 75°F (24°C) is quite suitable. Thickets of plants for it to retire into are advised. All live foods and tiny pieces of meat are eaten with relish.

NEW APPARATUS

PROOPS AQUARIUM CABLE TIDY

To solve the problem of the increasing number of electrical leads to the aquarium, Proops Brothers Limited have introduced this new unit, which will fit all home aquaria.

It provides safe, neat mains distribution for up to four accessories, pump, heater/thermostat, light, etc. Electrical connections are totally enclosed and two press switches are provided to give independent on/off control of pump and light. A single cable connects the Tidy to the mains supply.

Recommended Retail Price £1.10, complete with fixings and full instructions. Size overall: 6½ in. × 1 in. × 1 in. high.

From Proops Brothers Limited, The Hyde Industrial Estate, Edgware Road, Hendon, London, NW9 6JS. Telephone: 01-205 8006.

Find the Instruments!

by Hilary Maynard

My first is in DAYLIGHT but not in DAY,
My second is in HARDCORE but not in CLAY,
My third is in TYPE and also in BREED,
My fourth is in TUBER but not in SEED.
My fifth is in MARINE but not in FISH,
My sixth is in HOLDER but not in DISH.
My seventh is in FUNGUS and also in SOIL,
My eighth is in STUDY and also in TOIL.
My ninth is in LAMP-HOLDER but not in LIGHT,
My tenth is in PREDICAMENT and also in PLIGHT.
My last is in OFFSIDE but not in GOAL,
My whole are first-rate for keeping control!

Answer on page 260.

FURTHER NOTES ON KEEPING DISCUS

by R. H. Cooke

SO YOU HAVE decided to keep Discus. Two items are therefore necessary (1) Fish and (2) Water. All other items such as filters, heaters, aerators, gravel and plants are supplementary to the maintenance and well-being of these two necessities. Both must be treated with utmost respect and care if the Keeper is to be successful throughout the life span of these Kings of the Aquaria.

At this point I feel the hobbyist must make up his mind whether he is to keep fish or plants. Contrary to ingrained popular belief, one is not dependent on the other, neither can the best be had from either when housed in the same aquaria. For example, although I am myself not in favour of medicinal cures for fish ailments, how frequently one has to consider the plants when wishing to introduce some chemical to attempt a cure. Sterilisation of equipment after unfortunate outbreaks of disease can seldom be accomplished without causing serious setbacks or death to the plants, upsetting the process of photosynthesis to an extent where all possible aid to fish life is either stopped, retarded or reversed. You may add a couple of bags of stable manure under a soil base for the purpose of good plant-growth but I dread to imagine what could happen to the fish in such water. There are many chemical additives that can be added to the water to assist the plants; many are lethal to fish in the concentrations necessary to be effective. A flourishing collection of plants in the aquaria is a beautiful sight, creating a feeling of splendour and peace. On the other hand, unhealthy plant life is a hideous jungle of decaying mulm and the dividing line between these states is exceedingly small. How many successful and experienced aquarists can boast peak plant-health 365 days a year for as many decades as they choose? As the days grow short towards the winter and long towards the summer, artificial light compensation is a must; however, the respective spectrums are far from similar and the scene changes. Good plant-growth means more plants; these have to be thinned out and up comes the sub-filth in all its gory splendour. The amount of good they do, if any, is small, being a possible reduction in temporary hardness as the carbon dioxide is reduced during the process of photosynthesis, the bicarbonates reformed

in the presence of sick plants and hours of darkness. Also, you will not maintain good sanitation with plants in the tank. Brown *algae*, green *algae*, blue *algae*, they have all got to go in the interest of the health of your Discus and the condition of the water in which you will keep them. If you must have plant decor they must be plastic. Now, before the old'uns sneer, I can take my plants up without the aforementioned filth and sterilise them in boiling water; subject partially closed I hope. Many unkind things have been said about plastic plants but there are many delightful specimens to be had these days and let's face it, your 100 gallon Discus tank can never be a small part of nature that adorns your lounge. We have to readjust our thinking and view the home aquaria as a creation in its own right. For example, does the family afternoon stroll in the town park create a feeling that you have captured a small part of Nature's Countryside? I think not; the shimmering woods and gentle meadow lands of country life are far removed from hedges trimmed to look like peacocks and flowers to form the shape of crowns and clocks that you find in parks. Both are delightful in their own right and so it is with our aquaria.

Just think of a stream 10 yards wide, one yard deep and 50 miles long and you have approximately 162 million gallons of water flowing exceedingly slow at a rate of perhaps 800,000 gallons an hour. Seeing this more clearly, imagine your friend has a 100 gallon Discus tank which you wish to copy on the same scale. As your friend is copying the 50 mile stream, your representative water quantity would equal about three millilitres or a quarter of a thimble full. Quite ludicrous isn't it? So back to reality and plastic plants. I find it more convenient to remove the boat-shaped plastic base and fit the plant stem through a piece of slate drilled to a snug fit, afterwards sealing the underside with a hot iron to prevent them coming out. This slate, like any other used in the aquarium, should be totally immersed in three per cent hydrochloric acid for 24 hours and thoroughly rinsed with water before use. Plant them to provide cover for the fish and in a manner most pleasing to the eye.

Let us go back to the beginning and consider the tank which is to be the home for your fish. A 50

gallon tank is about the smallest sized that you can use if you are keeping a pair of adult Discus and bringing them into breeding condition. Pay particular attention to the top rails of the frame as the underside of these top rails are subjected to continuous condensation; seal them with silicone rubber sealant or use a stainless steel or nylon-coated tank; fit a non-toxic plastic edge around the top and place a cover-glass over this to act as a condenser plate thus preventing excessive evaporation. These cover-plates can be drilled by glass dealers to accommodate filter hoses, a good plan of action because outlet hoses have been known to break free from their suckers and pump the not less than 50 gallons contents on the lounge floor. It has happened to me and many others also and I can assure you that quite apart from loss of fish, the wife is liable to get cross. A further feature of these cover-plates is to prevent moisture in the lamp house, a cause of early electrical failure and drip-back into the tank from possible poisonous lamp house materials.

If you are going to purchase a large tank for Discus, exercise extreme caution in your choice as you may wish at some time to subject it to a wide range of temperatures. Manufacturers are working very near to the bone in respect of angle iron and glass, particularly the latter. In order to economise they are dividing the base into two sections each individually glazed; this may be good designwise but the glass they use is frequently not within the limit of safety if you are to keep Discus. I have examined the designs associated with large tanks with the help of the best respected glass manufacturers. The following details may be helpful and represent the absolute minimum thickness of non-reinforced panes.

Tanks 48 in. \times 18 in. \times 18 in. with divided base, strapped back frame, front and base $\frac{1}{8}$ in. remainder of panes $\frac{1}{4}$ in.

As above 60 in. long $\frac{1}{4}$ in. all round.

Tank 72 in. long $\frac{1}{4}$ in. all round, back and base strapped at 24 in. and 48 in.

As above 72 in. long 20 in. high, $\frac{1}{4}$ in. all round.

Where it is necessary to use $\frac{1}{4}$ in. glass the minimum angle iron is $1\frac{1}{2}$ in. \times $\frac{1}{2}$ in., and 2 in. angle for thickness of glass up to $\frac{1}{2}$ in. Where the above thickness of glass is unobtainable, use the nearest higher available fraction.

I was recently quoted for a tank 72 in. \times 18 in. \times 18 in. from a trusted and well respected dealer. They discovered, at my request, (as they do not manufacture their own tanks) that it would consist of $1\frac{1}{2}$ in. angle and $\frac{1}{4}$ in. glass. In my opinion such a tank could only be kept at ambient temperatures with safety. So buyers beware. (Price £53).

Next on the list will be suitable thermostats and heaters, nothing unusual there except for a 10 amp

thermostat. So we pass on to lime-free gravel treated as the slate in three per cent hydrochloric acid, and very well rinsed until all traces of acid is gone.

An aerator is handy although a power filter properly fitted will provide more than adequate aeration. A point I must mention is that Discus definitely do not like turbulence in the tank; vigorous aeration should take place within a tube or shroud, drilled through the side to allow the mild circulation of water. Power filter outlets should be similarly constructed to prevent turbulence. At this point I must add before continuing with filtration, that I have assumed that you will have prepared suitable soft water as explained by both Mr. D. K. Brown and myself in previous articles. Having filled your tank with this soft water, what you continue to do to maintain its purity and suitability is up to you. I started my experiments by doing everything possible and worked back from that point carrying out continuous observation on the fish as I removed mediums from the filter system. Variations in temperature from minimum lethal to maximum lethal together with similar changes in pH at each stage, of course, also allowing time for relapse after each experiment. I would not like you to form the opinion that you cannot have Discus under any other conditions than that which I describe. Of course you can; in fact, a large dealer living not far from me tells me that he imports and sells more Discus than any other. He maintains them in tap water and feeds them on *tubifex* worms; however, they are in poor shape by my standards.

You may have Discus, but do you keep Discus healthy? Can you buy wild Discus and cure their minor ailments? Can you grow Discus up from baby fish through sickness and health to breeding pairs; to death through old age do us part?

You must know the causes and remedies for sickness as woman knows her child. So unless you fill the above bill, no matter how long you have had healthy Discus in your tanks, you do not keep Discus. Now if you want just to be lucky, purchase young tank-bred fish with the breeder's diet sheet and stick to it. However, you cannot, even with these fish, abuse the condition of the water in which they live, so back to the tank containing water, fish and plastic plants and lime-free gravel. Now when I say fish I mean Discus fish.

There should not be any food left over for *corydoras* catfish; you do not keep rats in your kitchen to eat up the food the family leaves during meal times; you eat it all up like a good boy or Mummy won't give you so much next time. Just as much food as we need is the rule for both family and fish.

Now let us consider what will happen to this pure demineralised water into which we have placed our Discus. Firstly, it is not pure at all. It will be soft because we have reduced the carbonate hardness but

it will be crawling with bacteria and spores far too numerous to mention. Moderately high temperature and light will bring them forth in abundance. Of course, raising the temperature to 50°C will help and give you a clean start, but 50 gallons minimum is a lot of water to heat up. The answer is to pass the water through an Ultra Violet Sterilizer. (I will deal with this subject under a separate cover). I do know that during that part of my experiment (Ultra Violet Sterilization) my Discus were exceedingly healthy and I never changed the water over the whole of that period. The problem is few Ultra Violet Sterilizers are available at hobbyist price and those that are available for under £20 have no more than 500 hours life. In the end, with the advice and help of Mr. Morris and Mr. Marshall of Shandon Scientific and Mr. Zamit of Anchor Glass, I developed my own device which costs about £4 a year to maintain. Yes, such a device will keep your water suspended bacterial count down to practically zero, but you still have fish-waste to cope with; Ammonia can be readily liberated from the water by brisk aeration, but you may still have plenty of organic waste such as faeces and epidermal excrements to remove or your fishes' health will fail for these reasons. "It is little use sweeping it under the carpet known as the undergravel filter," which was a statement made by our good friend Mr. Cotton of Birmingham when I once tried to open a discussion on Filtration. This is particularly true when the water is acid and sterilized; an undergravel filter just does not work under these conditions. You have just got to suck up the waste with a siphon bell or power filter. A carbon filter medium included in the filter system is of great value where organic and colour absorption is desirable. However, carbon filter mediums contain plenty of residual ash that will swing the water to alkaline and harden it. You should be able to reduce the effect by first washing the carbon in three per cent hydrochloric acid, but having done this I have never been able to rinse it out. I would say, however, providing carbon is well washed and changed more frequently than recommended, the good it does far outweighs the bad. Remember, pure carbon is insoluble in water; if you don't use it you may have problems with the pH drifting towards the acid region. No matter how much control you put on the water condition, I remain convinced that partial water changes are desirable.

Peat in the filter for Discus I would say is a must. In regulated quantities it will provide the necessary acidity and the fish always seems to do better when this medium is included. I have never been quite sure when the time is best for renewing it but one must keep in mind that any filter medium is a dirt trap through which you pass all the water in your tank and for this reason all filter mediums should be

regularly changed, cleaned or reactivated.

We now come to water softening resins (not demineralizer resins) which frequently become included in the system. One of these resins is marketed by Eheim and is known as Ehfimar S.U.R. I personally have experienced trouble with these resins. Let me first say that I am not convinced that Discus like sodium ions any better than calcium ions. I have bought fish from dealers who have consistently used water-softening resins and nothing else. Fish so kept have been in no better health than when kept in hard water, all displaying inaccurate colouring, with clouded and ragged fins. Fishes kept under these conditions cause me to prepare for trouble in the future and I only purchase them as a challenge, (to try bringing them into peak health) and to gain experience in the fight against disease. These water-softening resins behave in a peculiar way. One could ask the question that if one has started with soft demineralised water what has one to soften anyway? It is said that they are beneficial in other ways, such as the reduction in nitrogenous wastes. It would be interesting to know what (ion exchange) conversion takes place. I do know that if you use them it is a good policy to keep the temperature down. I have had Discus jumping out of the water owing to over-enthusiasm with such media. I personally would not use them again for filtering; each filter medium can be protected with a layer of synthetic wool which, after fouling, can be soaked in boiling water for ten minutes and thoroughly washed for re-use if the hobbyist wishes to economise. I use plenty of this material, preventing early clogging of the other mediums and a barrier for peat fibres liable to enter the tank.

Summing up the filter contents from intake to output, use a layer of synthetic wool, use carbon proportional to the tank capacity (i.e. if two kilograms of carbon is supplied to serve in a power filter rated for tanks of 400 litres use only one kilogram of carbon for tanks of approximately 200 litres; this is in the interests of not over-hardening the water, between water changes). Use a further layer of synthetic wool followed by strong peat again proportional to the tank capacity and finally, as much synthetic wool as can conveniently be packed in without over compressing the peat. The problems of lighting, feeding, temperature and disease are subjects of separate interest to be considered in a different article later. When Discus enter your home, they enter your heart, an inseparable marriage takes place between family and fish; they show as much interest in what goes on outside the tank as in what goes on inside the tank; their personality is unique. All the Discus we have owned have been named in accordance with their idiosyncrasies, Hector the Heckle, Bulley and Stripey have all passed on to satisfy the thirst for understanding and knowledge. Their epitaph, a 100 gallon tank that adorns my lounge.

The Saga of the Missing Water

by S. M. H. Loquens

AS ALL WHO possess aquaria know, it is periodically necessary to add water to them to compensate for that lost due to evaporation. This is a routine and simple operation that is part of aquarium maintenance and one that cannot really go wrong, or can it? If one reads further I will relate a near disastrous experience that almost befell me some weeks ago.

I was preparing to leave home for a couple of days and had carried out the above topping-up procedure shortly before leaving. The fish had all been fed and everything seemed in order to leave them safely during my absence. A quick glance around the aquaria satisfied me that all was well with the inmates and I left without further thought.

Upon my return, I made my way to the fish house and entered. The sight that met my eyes left me staggered! There was water all over the floor and two aquaria, formerly containing some thirty gallons each, were almost drained, while a third, of smaller capacity, had lost a good proportion of its contents. A sudden crack in all three aquaria I thought. The odds against such an event striking all three at once seemed rather unlikely. What else could have accounted for such a drastic water loss in so short a time? The possibility of someone entering the building and draining off the water as a joke, or as an act of vandalism, flashed through my mind. This theory was quickly dashed, however, as the lock on the door was quite secure and in no way tampered with. I pondered upon the scene before the obvious answer dawned upon me. Each aquarium was supplied with air from a pump (not working in my absence) via the standard type of plastic tubing and it had been through this system that the water had slowly been siphoned. Exactly what started this sequence remains a mystery. My only suggestion is that an airlock had been set up in the tubing due to the increased water pressure upon topping-up, and this had eventually given rise to the siphoning action. It was really only by good fortune that the tubing had been partially clamped, thereby reducing the rate of flow, or I may have found my aquaria totally drained.

The moral of the story would appear to lie in the topping-up procedure. It seems that this should be done before there is too great a water loss, as the addition of large amounts of water would appear, under certain conditions, to induce a siphoning action in any small bore tubing present.

BOOK REVIEWS

The Compleat Naturalist—A Life of Linnaeus
by Wilfred Blunt. Published by Collins at £3-50.

Most of us who glibly trot out such names as *Pterophyllum eimekei* never spare a thought for the man who undertook the gigantic task of creating the foundations of our international classification of plants and animals. That a non-Spanish speaking Briton can refer to the fish of his choice to an aquarist from Madrid who does not understand English, is one of the minor advantages deriving from the development of the Linnaean system. The master-mind behind the system belonged to Carl Linnaeus who was born in Sweden in 1707.

Son of a priest who was also keenly interested in botany, Carl was encouraged to foster a love of plants and flowers from a very early age and an infatuation was formed which was furthered during his teens by his schoolmaster who shared an interest in botany. Destined for priesthood, Linnaeus disappointed his father by falling short of the mental standards required to pursue scholarship to that end. With the intention of taking up a medical career, Linnaeus progressed, by way of Lund University to that of Uppsala at which seat of learning he eventually became a professor. But in the years intervening between those of the medical student and those of the professor, Linnaeus enjoyed a most lively, varied and meritorious career. His exploration of Lapland, authorship of several books and scientific achievements are described with a wealth of detail in this book and make absorbing and amusing reading.

While a German contemporary said of Linnaeus: "... nothing more than a living lexicon of self-invented words," another called him "the most intimate and scrutinising minion that ever graced the bosom of Nature." Goethe and Rousseau both freely admitted how influenced they were by the naturalist. Rousseau, writing to Linnaeus, said: "Alone with Nature and with you I spend many happy hours walking in the country and from your book, *Philosophia botanica*, I get more real profit than from all other books on ethics." Goethe carried a copy on his Italian journey in 1786 and said later that he had been re-reading Linnaeus and "was amazed by the extraordinary man. I have learned an enormous amount from him." He went on to say that, with the exception of Shakespeare and Spinoza, he knew of no one among those no longer living who had so strongly influenced him.

His first volume of *Species Plantarum* appeared in 1753 and Sir William Watson reviewed it in the *Gentleman's Magazine* saying that it was "the masterpiece of the most compleat Naturalist the world

Continued on page 260.

Junior Aquarist

MYSTERY SURGEON OF THE SEA

by *Huw Collingbourne*



THE DEEP, oval shape lay limp on the gravel, its fins folded tightly against the dark brown body. Meanwhile, from behind a branch of coral, the flickering of fins gave away some small harmless-looking damsel fish. The three damsels and the surgeon had lived peacefully together in the small aquarium for several weeks whilst their usual 50 gallon tank was being repaired. But now they had established territories and the poor surgeon had been set upon for unknowingly crossing the unseen borders of these areas.

I picked up the corpse. Yes, there was no doubt as to the cause of death: *Misadventure*—into damsel space.

And yet he looked a very robust sort of creature, this surgeon, more than 4 in. long, over twice the size of his assassins, and very much deeper in the body; well, all surgeon fish are, aren't they? Then, he had excellent weapons with which to defend himself, razor sharp scalpels sheathed in slots at the caudal peduncle. That's where they were supposed to be anyway, though even when he died, I failed to find any.

These scalpels or lancets give the surgeon its name, of course, so if mine was a surgeon, he surely must have had them. The members of the genus *Acanthurus* have two scalpels, one either side of the tail, but the *Naso* surgeons have three or more pairs

of scalpels, and mine was evidently *Naso crevarostris*, so how could I possibly overlook all those blades? Most of the family *Acanthuridae* have brightly coloured lancets which show up well and, one supposes, keep potential killers at their distance. The startling beautiful *Acanthurus leucosternon*, for example, has well defined yellow lancets set in a glowing blue body.

It is possible, I imagine, that my particular fish was a mutant minus scalpels for, if a fish approached him, he would lash about with his tail which is the traditional means of defence for a surgeon fish, except that any other would have accompanied this with erection of its blades. But the mystery doesn't end there for although I was told the species when I purchased the fish, I have been unsuccessful in finding any reference to the type in any reference book I can lay my hands upon. The nearest I can get to *Naso crevarostris* is *Naso tuberosus*, the Indo-Australian Bumphead Surgeon. These have enlarged snouts, and a somewhat exaggerated cichlid-like brow. But from the pictures I have seen of this, it bears very little resemblance to my fish. Apparently, however, the young Bumpheads have normal foreheads. But that still doesn't explain the lack of scalpels.

The family Siganidae are closely-related to surgeon

fishes but they lack scalpels. There are more than 30 species in this family, commonly called rabbit fishes, and the general shape seems to match pretty well with that of the mystery fish but rabbit fish are generally brightly coloured with reticulated patterns and vermiculate markings, something like those of a blue acara. Each stout spine is fitted with a poison gland in these fish. And yet, I am still not convinced that he was a rabbit fish.

Perhaps an *Aquarist* reader will have some knowledge of the fish and will let me know via the letter pages. As I have said, my fish was not brightly coloured. At times he was dark brown, sometimes light brown, pink, on other occasions almost white, when upset mottled, sometimes grey, steel blue or a combination of colours. He swam using his pectoral fins, but used his tail to stay inert midwater.

He earned the title of The Dolphin because of his habit of chasing floating food backwards across the surface of the water and, being very tame, he took food from my fingers without fear. He liked cooked prawn best of all, even more than green seaweed and cooked greens, though surgeons and rabbit fishes are herbivores in nature. He also ate dried foods, pieces of fish, cat food and shelled peas which he liked as much as prawn. These he took in one gulp and he would eat so many in one go that his body swelled to ludicrous proportions. He was a remarkably peaceful fish, and although comparatively drab in a tank of damsels with a butterfly fish, clowns and a trigger fish, he soon established himself as a firm favourite with everyone from the age of two upwards, both experienced aquarists and complete outsiders.

Can anyone identify this fish for me?

BREEDING *Pelmatochromis thomasi*

by Guy Robertson (aged 14 yrs)

I WAS encouraged to buy these dwarf cichlids as soon as I saw them in my dealer's tank because one of the females was a much darker colour than the others, and her egg-tube was obvious.

I purchased her, along with a male that was near her all the time, and they were installed in an 18 in. by 10 in. by 10 in. aquarium, furnished with a large flat rock, a small flat rock and a flower-pot. For the next two weeks they showed off to each other, butting sides and sucking at each other's bodies.

I came home from school on the Friday of the second week to find that they had spawned on the large flat rock. The female's colour had darkened and she was fanning the eggs. The eggs numbered about sixty and all were carefully fanned and mouthed by both parents. After two days the eggs had grown tails, and parents moved them to a pit in the gravel.

That was the last I saw of them, and it was obvious that the parents had eaten them. But a week later they spawned again and I decided to hatch them artificially. So the eggs (which had been layed on the same rock) were put in a 9 in. by 6 in. by 6 in. aquarium with about five drops of methelene blue and an airstone which sent a stream of bubbles past the eggs to represent the fanning of the parents.

In two days the tails had appeared and on the third day they were lying on the bottom of the tank using up their yolk sacs. By day seven they were free-swimming and accepting infusoria.

At about this time the male *thomasi* turned nasty and, unfortunately, killed the female. But the fry were doing well and accepting brine shrimp.

A week later, and up to the time of writing, they have been doing well on screened *Daphnia* and dust

dried food; they number about twenty.

About a week after the first female had died I purchased another. She and the male were put together in my four foot community tank just to ensure that they got on together. They did, and a week later I saw both fish cleaning a *cryptocoryne* plant. I moved them to a 12 in. by 10 in. by 10 in. aquarium.

I went on holiday the next weekend and, unfortunately, my parents did not see that the fish had spawned and eaten the eggs. I could tell this by the fact that the female had become much thinner. They spawned again a week later and I removed the eggs with the flowerpot in which they had been layed, and put them in a pyrex dish with the methelene blue and airstone. I stood the dish on an upturned flowerpot in an 18 in. by 10 in. by 10 in. tank and the eggs should hatch soon.

Pelmatochromis thomasi is found in West Africa from Liberia southwards to the Congo. The male is 2½ in. long, the female nearly 2 in.

The male has large fins which are a pale yellow in colour, with turquoise lines sometimes visible. The dorsal fin has an orange edging. His body is a light purple and it has four grey bands spaced between the base of the tail and the gill. On the upper half of the body he has many small turquoise and purple spots.

The female's body is a light brown and her bands are much more intense. Her body is rounder than the male's and her fins are smaller.

They breed at a temperature of 80°F and the first sign of a spawning is when the female's body has darkened considerably.

Book Reviews (cont. from p. 257)

has ever seen." The work is accepted as the basis of modern botanical nomenclature "while zoologists similarly refer back to the publication in 1758 of the first volume of the tenth edition of *Systema Natural*.

"The Complete Naturalist" has two hundred illustrations of which some are beautifully reproduced in colour on thirty-two pages. This is a volume for the book-loving naturalist who will feel he must possess it once he has handled it.

Tropical Fish and Aquaria. By Leslie B. Katterns. Published by Cassell & Company Ltd. London, 50p.

The beginner will find a lot he wants to know about keeping, breeding, feeding and showing tropical freshwater fishes in this little book. It is a pity, though, that the author, for all his fifty years' experience as a fishkeeper, has not troubled to spell their scientific names correctly or spared himself the time to study their characteristics or the rules of nomenclature. The informed aquarist will wince when he reads that: "The term *Loach* is applied to a number of fish and it has no scientific significance since it covers fish of many different families." (To the best of my knowledge, all loaches belong to one family, the *Cobitidae*.) A page or two later we find this following gem of misinformation: "Tetra, or Characins as they are sometimes called . . . cover several families . . . all of which are omnivorous". I find it hard to believe that some of the flesh-eating characins would accept lumps of rice pudding or Dundee cake. As for tetras belonging to several families, this is not true: most aquarists refer only to the small fishes of the genera *Hyphessobrycon*, *Hemigrammus*, *Cheirodon* (and a handful more) as tetras; all of which belong to the family *Characidae*. Further, I do not equate such a sentence as "I reduce the temperature down into the high sixties" with careful writing. But on the subject of temperature, Mr. Katterns has some sensible things to say as, for example, that it is not necessary to maintain one particular temperature day in and day out. "Some fluctuations are beneficial provided they are kept within a reasonable range and are not too sudden." Also, he is no friend of the manufacturers of filters and air pumps. "I have three hundred aquaria in my fish house," Mr. Katterns proclaims, "and do not use or even possess a pump."

The last two pages of this book are wasted on an Appendix sub-titled *Further Reading*. I say wasted because the names of three of the foremost aquarium magazines in the English-speaking world and four books can hardly be described as a guide to further reading, especially since three of the books he mentions are American; the fourth is a native product. Mr. Katterns lists it as *McKinery Book all about Tropical*

Fish. I doubt whether Mr. Derek McInerney will be happy about this.

Tropical Fish and Aquaria is adequately illustrated with line drawings and some clear black and white photographs.

JACK HEMS.

Tropical Fish in Colour by Braz Walker. Published by Blandford Press Ltd. at £1.20.

Now, here's a chubby little book which will be welcomed by tropical fish enthusiasts. The volume measures 5½ in. × 4½ in. and is just under an inch thick with its hard cover. A convenient size which will fit the pocket. One hundred and twenty species of fish are dealt with, each having a colour photograph and a page of information. The photographs are of very good quality, well reproduced and are attributed to the author "and others." Information comprises: Order, Family, scientific name, popular name and range. This is followed by a description and useful notes on care, feeding and breeding.

One is tempted to see which species have been omitted since the total had to be limited for such a compact volume. The Oscar and the Firemouth are among the absent friends but a dozen killis are included and four Malawi cichlids.

The author will be well-known to serious aquarists as the Senior Contributing Editor of the American magazine, *Aquarium* and he has here succeeded in producing a most useful work of reference which is attractive, easy to handle, factually reliable and reasonably priced. It is likely to enjoy considerable popularity.

Crossword Solution

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

Answer to Find the Instrument

THERMOSTATS



**Re: Letter in Your August Issue
"I.M.S.S. Enigma"**

It was noted that the "British Marine Aquarist's Association" was mentioned in your correspondent's letter *Aquarist*, August, 1971 and the Management Committee would like to clear up any misunderstanding which may have arisen as a result.

The B.M.A.A. would like it to be known that it has never been in any way connected with the I.M.S.S. and has no intentions of being so in the future. Indeed, as there have not been any replies to the numerous letters of complaints about the I.M.S.S. over the past few months, it is our opinion that that Society is now defunct.

We also feel it would be to the benefit of the marine hobby if correspondence *Re: the I.M.S.S.* is well and truly closed as it merely opens old wounds without any corresponding advantage.

In a more positive vein we would like to take this opportunity to inform your readers that Mr. Graham Cox of SeAquariums, who is without doubt one of the foremost marine aquarists in the U.K., has honoured us by accepting the Presidency of our Association.

DEREK HIGHFIELD
(Hon. Chairman, B.M.A.A.)

**British Marine Aquarist's Association
Successful Show**

The British Marine Aquarist's Association secured second position in the Inter-Society Competitive Display at M.A.P.S. Open Show at Bingley Hall, Birmingham, 18th-21st August.

This was an unexpected bonus as we had entered mainly to advertise our Association. In 180 gallons of seawater were displayed a wide range of native and foreign marine fish and invertebrates. A fantastic selection of native marines collected and sent to Birmingham by B.M.A.A. Members Lewis Doubleday and Adrian Carr from Torbay, included: greater pipefish, wrasse, rocklings, fifteen-spined sticklebacks, dabs, crabs, hermit crabs, sea-urchins and sea-anemones. Graham Robertson, from Aberdeen, sent down a couple of beautiful squat lobsters *Galathea strigosa*.

Members of the Association's West Midland Group bought along the tropical specimens which included batfish, scorpion-fish, clowns, damsels, butterflies, a tang, sea-horse and sea-anemone.

The theme of the stand was a sunken ship with all-glass tanks placed amidships.

Members of the public showed great interest, especially in the native marines and for the duration of the show people stood six deep around the stand, firing questions at our hard working Members who left suffering from sore throats.

GRAHAM WARDLE,
B.M.A.A., Newsletter Editor,
119 Kent Road, Woods Est.,
Wednesbury, Staffs. WS10 OSN.

Cost of Water

In his article on the preparation of water for discus fish, in the September, 1971 issue of *The Aquarist*, Mr. R. M. Cooke states that pet shops can produce demineralised water at less than one penny per gallon—while selling it for an average of 12 pence per gallon.

Perhaps Mr. Cooke does not realise that shop-owners have to earn a living like other people. His exorbitant profit, I feel, comes from two sources:

- (1) The length of time involved in regenerating the equipment, and the cost of acids and alkalis, and
- (2) The high cost of commercially produced demineralisers—up to about £120 each, I believe.

Also one has to take into consideration that certain manufacturers supply their water wholesale to retailers, involving a little extra cost on the part of the purchaser. Even so, at 5p per gallon, I consider our local aquarist shop's water excellent value.

Finally, I disagree that the safest way to dispose of excess acids and alkalis is to bury them; surely it is better to dilute them *thoroughly* and then wash them down the sink.

IAN SELICK,
Hemel Hempstead, Herts.

The British Killifish Association

As of September 1st, 1971 the affairs of the above Association will be in the hands of a new Management Committee and I have been asked to request that this information be published in your magazine.

Due to the economic situation the new Management have reluctantly been forced to raise the cost of the Enrolment Fee to £2.50 for U.K. Members and £3.00 for Overseas Members, this is the first raise since the Association was formed in 1965.

All enquiries should now be directed to the new B.K.A. Secretary and should be accompanied by a stamped addressed envelope.

Mr. K. Jenkinson,
12 Whitedalehead Road,
Whitburn,
West Lothian, Scotland.

Both the retiring and incoming Committees have asked that I express their sincere appreciation for the

continued on page 265

WHAT IS YOUR OPINION?

by B. Whiteside

Photographs by the Author



You WILL probably be as interested as I am to know that this column has attracted at least one letter from America. It's from 12 years old Brad Galliford, of 4002 Circle Avenue, Reading, Pa. 19606, U.S.A., and he writes: "I have received only four issues of *The Aquarist*, but that is enough time to find that your column is the best." Brad goes on to say that his father used to raise fancy guppies. Brad has four tanks, ranging in size from 18 in. to 3 ft. Most of his fish are tropicals, and he feeds them on Biorell flake foods, live brine shrimp and frozen bloodworms. To deal with green water he suggests that the tank is dismantled and thoroughly washed with a solution of 1 cup of aquarium salt per gallon, and that the lighting is reduced. In his area, no one has tried to grow the dwarf lily. His favourite fish are angels and gouramis, and one of his favourite plants is red *Ludwigia*. He has tried aquarium photography from a distance of 3 ft. and the shots turned out rather well.

Mr. Kevin Ireland lives at 11 Berkeley Road, Shirley, Solihull, Warwickshire, and he says that he agrees with Mr. Higham on "the excellent quality of your recent photographs." (Thank you!). He says if the photographs are of my own fish. Indeed they are. Unfortunately I do not know of any dealer in N. Ireland who would permit me to photograph his fish so I have only had my own to photograph. As I have now taken shots of all my different types of fish, I will soon be running out of photographs of fish. Photograph 1 shows a fish which has presented me with a problem: I don't know what the fish is. Do you? The fish has an olive green body and fins, with the exception of the dorsal fin which is mainly red, with a white and black bar. The fish was given to me by an aquarist who has since gone to live in Australia. It resembles a green molly but has a number of differences. I'd be pleased to have your opinions as to what it might be—possibly a hybrid of some kind? Mr. Ireland purchased a 4 in. male convict cichlid some months ago and has been unable to obtain a suitable, large female to mate with it. He asks if anyone can help. Mr. Ireland tells an interesting story which he heard from his dealer, who recently bought a piranha from an annoyed customer. Apparently the customer had kept the fish in a tank sunk into the chimney breast. There was not much space above the tank and the customer had his head squeezed into the space to look at the fish from

above. When he was in this position, the piranha jumped out of the water and bit a piece out of his ear! (Sounds like a fishy story!). Mr. Ireland ends by asking if any readers could tell him how to sex orange chromides, and for how long a *P. kribensis* can be expected to live.

Another young aquarist, Andrew Stratton, of 18 Ambleside Avenue, Streatham, London, S.W.16, has never managed to get his *Cabomba* to flower, but he has got it to grow very large. (I thought that you would be interested to see the photograph of a *Cabomba* plant which I recently removed, with many others, from an 18 in. x 10 in. x 10 in. tank. I could hardly find the end of the plant and, on measuring it, found that it was just over 5 ft. in length. I have placed a one-foot ruler beside the plant for comparison. Do readers have any records of longer plants?). Andrew does not think that many young aquarists have kept Lake Malawi cichlids because of the price. He works for his local dealer at weekends, and during holidays, and has always found him to be very co-operative with customers. A new gadget which Andrew would like to see is a net with a mesh top which could be snapped on before the fish was taken from the water, to stop it from jumping out.

The following letter should please the many cold-water fans who have been recently asking where they might obtain stock. The letter, which was delayed, came from Mrs. Gladys Longstaff, of 37 Celandine Road, Hershams, Walton-on-Thames, Surrey—Telephone: Walton-on-Thames 29305. She has been a reader of this magazine for 25 years and has enjoyed this feature since it started. She has been surprised by the comments about the scarcity of fancy goldfish as her problem has been in finding a market for young fancy goldfish. In '69 and '70 she had a surplus of orandas, fantails and shubunkins; she tried all the local dealers and pet shops but they were not interested as the imports of foreign goldfish were so cheap—and mostly rubbish—that the general public was not given the chance to buy home-bred fish. For the past two years she has been showing veiltails at the London and South Eastern shows and has been very successful. On 5th April this year she had two spawnings of veiltails and another spawning on 7th April; a fourth occurred on 30th May. As she has a fish-house with about thirty tanks and four concrete ponds, the fry

were given plenty of room, and at the time of writing were about 1½ in. in body length.

By the end of June she would have picked out her breeding stock and show fish and would have had two or three hundred young veiltails of which to dispose. They will not, obviously, all be good show-fish but they will be the nucleus of good breeding stock and the parent fish can be seen by anyone interested in buying youngsters. Unfortunately, Mrs. Longstaff does not have the facilities to despatch fish all over the country but she would welcome callers at any time. (I hope that this will be of use to those who have written to me).

Mr. M. Wrol lives at 7 Savages Trs., Corry Square,



Newry, Co. Down, N. Ireland, and he has been reading about over-crowding. He has managed to get away with it up to now. One of his tanks is 18 in. x 12 in. x 12 in., has an undergravel filter, and one 25 watt bulb. The filter operates for 24 hours per day. The tank contains five male red swords and 25 females, as well as king cobra guppies. He could watch his fish for 24 hours per day and still wonder about them.

20 Connaught Drive, Finchley, N.W.11, is the home of Mr. M. Davis who, as one who has kept tropical marines for a year, says that they present three main problems in his experience. The first is cleanliness and he finds undergravel filtration a major problem. After the water in his tank went milky, due to initial over-feeding, it took three weeks to get it clean again by under-feeding. There was a great deal of dirt on the top of the gravel. When a cleaner wrasse died—the third one to do so—he received a post-mortem report indicating that the water should be changed. Mr. Davis's solution was to remove the U.G. filter and install an Eheim filter. The result has been that the nitrate level has not risen above 5 p.p.m., and is usually only 0.5 p.p.m. The second problem is feeding. He has found that certain types of fishes, although they eat when first introduced, tend to go off their food after a few weeks, and waste away. This has happened to the wrasses which Mr. Davis has introduced into the tank

since the new filter was fitted; however he has found that all his butterflies and his Koran angel have been the best feeders of all. He always buys fish which he knows he can feed. The third problem is compatibility. As Mr. Davis cannot afford to buy all his fishes at once, he has to be careful that the fishes which he buys will live peacefully together with the present and any planned future inhabitants. He speaks from experience having had a yellow-tail blue damsel harried by a newly introduced beau Gregory, resulting in its death two weeks after; similarly, a *percula* clown, 2½ in. long, lasted only 36 hours when added to a tank containing a *sebae* clown of the same length. These, Mr. Davis thinks, are the three main problems but, when these have been surmounted, he considers that a tropical marine tank is no more bother to maintain than a freshwater tropical tank.

It's some time since we heard from 4 Springwell Road, North End, Durham, the home of 14 years old Andrew Patterson. He's made some progress with 35 mm. aquarium photography and uses only camera, tripod and overhead photoflood. He recently took up cine and has a 5 minute, really clear, bright, sparkling super 8 movie, taken using one cine light attached to the



camera. He thinks that convict cichlids are the easiest to spawn: all they need is a smallish tank and good feeding. He had a pink pair which spawned and raised their young in a 3 ft. tank with two 4½ in. blue acaras, two 3 in. Oscars, two 2 in. severum, two 3½ in. dolphin acaras and a 2 in. jewel cichlid. He does not think that any young were eaten as the two little fish kept the other fishes absolutely terrified. His favourite aquarium book is "Exotic Aquarium Fishes," by W. T. Innes, which he considers a wonderful work at the price, but he doubts the colour photographs at the rear of the book and asks if they are paintings. (Anyone know?). His second choice is "Advanced Aquarist," by Dr. F. N. Ghadially, which he considers a super work in his price range. (I like this book very much, too). Considering my large-tailed male guppies which have not fathered any young, Andrew

thinks that they use up much of their energy trying to keep their tail and body in a swimming position and have little energy for "natural desires." (I think that some fish are so hampered by their large tails that they are physically too slow to mate with the females. I repeat a question which I asked before: have any readers tried "docking" the tails of such fish, under an anaesthetic, to enable them to mate? If so, what did you use as an anaesthetic and what was the success of the procedure?). He thinks that Centigrade will take some getting used to as conversion is awkward—the aim being to maintain water at plus or minus 20°C, and the intervals are much greater. Andrew does like to see long advertisements with lists and prices but says that larger companies seem to prefer distribution of catalogues. (I would be pleased to receive some of such catalogues—but it means having to write off for them, wasting time and money. I'll order from those



who advertise in the press as I believe that a magazine's advertisements are often as important as its contents).

Mr. R. Dotchin lives at 2 The Crescent, Shortstown, Bedford, and has been reading *The Aquarist* since 1955. He thinks this feature is excellent and his favourite book is also Innes "Exotic Aquarium Fishes." He has never had the problem of green water but would consider that less light would solve the problem. He has never tried aquarium photography. He thinks that something is radically wrong in my guppy tank in which the fish have not bred. (It's a bare tank, with good filtration, and plenty of floating Indian fern. The fish are very healthy and get a wide range of good foods—both live and dried. I have a fairly soft water supply and did have some of the plants weighted down with lead. I have removed the lead strips, knowing that lead can dissolve in soft water, and wonder if this might have been one influencing factor. I have now introduced a young male fish, with a tail which has not yet developed very much, and am waiting to see if the females become pregnant). Mr. Dotchin has not noticed any changes in his fishes' behaviour due

to the longer days. He cannot see any advantage of C° over F°. Mr. Dotchin likes to see letters from younger readers. He is 48 years old and wishes that he had been able to take up fishkeeping earlier in life. He notes that Andrew Patterson changes part of his aquarium water regularly and says that he has never changed his water except when taking a tank down. He siphons the mulm from the base of the tank, filters the water, and returns it to the aquarium. He considers that split fins in guppies are due to a vitamin deficiency. He has never found it necessary to use a filter or an airstone; he thinks that plants do best with the water at at least 75°F (approx. 24°C). Mr. Dotchin finds that white clouds do very well at 62°F, and has four in a small glass tank in his dining room. Their colours are good. They are fed on dried foods, with scraped beef and *daphnia*, when available.

108 Aldwyn Crescent, Hazel Grove, Cheshire, is the address of Mr. S. A. Heap, and he sent me three different copies of the most interesting "Aquascope," the magazine of Belle Vue Aquarium Society. The magazine is edited by him and his wife, who also write most of its contents. He asks if any readers would care to contribute some items for their magazine. In return they will receive two copies of the magazine in which their item appears. The fish which Mr. Heap finds easiest to breed at the moment is the angel, which spawns every ten days on the glass of its community aquarium. When he has space for rearing, the eggs are scraped off with a net and placed in a 4½ in. × 4½ in. show jar, or tank, of water, with a drop or two of methylene blue. This is floated for about six days, with aeration, until the fry are free-swimming, and then most of the water is poured away as he finds that the "blue" impedes infusoria production. The fry are then put into an 8 in. × 10 in. tank, in one-day-old tap water; they are fed on infusoria tablets and "Liquifry" for two days, then brine shrimp for a week or so before fine dried food is mixed in. At three weeks chopped white and *Tubifex* worms are fed. About 80 per cent survive using this method. He asks for breeding information on *Ctenopoma congicum*. (Does anyone have any information?).

Mr. L. Jordan, of 62 Ferndale Place, Ascot, Berkshire, writes about his club's magazine "The Bracknell Harlequin," in answer to my question in a previous issue. At present his club is exchanging magazines with Ealing and District, Corby and District, Southend, Leigh and District, Mid-Sussex and Portsmouth. He is pleased to inform us that "The Bracknell Harlequin" is now accepted as the unofficial newsletter of a group of societies known as the Three Counties Group, comprising the following societies: Reading, Basingstoke, High Wycombe, Didcot and Bracknell. Present circulation is over 150 copies per month.

I was also pleased to receive copies of newsletters from Nuneaton Aquarium Society and Hastings and St. Leonards Aquarium Society. Another interesting publication—professionally printed this time—is the Cichlid Clarion, a copy of which was sent to me by its editor Mr. S. Forster. It is the official journal of the British Cichlid Association. If you are a cichlid fan, and interested in joining the B.C.A., write to Mr. Jim Birtles, Membership Secretary B.C.A., "Nicosia," Cyprus Road, Burgess Hill, Sussex. I have little experience of Cichlid breeding but feel tempted to join what seems to be a progressive association.

Mrs. P. R. Brown, of Quinta Hotel, Reddenhill Road, Torquay, writes that she has been unfairly treated by a number of firms and shopkeepers in the aquatic field. She purchased what was supposed to be a "silent" air pump and found that it was not silent. Wanting her £2.70 returned by the dealer she was only offered 75p. (I don't personally know of any truly "silent" air pumps. Do other readers? I do know of some which make a minimum of noise for a reasonable air output). Some plants, which she ordered from a large firm, were a great disappointment to her. She also complains that in no shop which she visited was she allowed to choose her own particular fish, nor was she allowed to take a good look at the fish which was netted for her. She feels that shopkeepers attach no more to the buying of live fish than, say, to the buying of a can of dog food. She asks why, and thinks that the lack of opposition may be the cause. She ends by saying that plants from Mr. D. Smith of Kidderminster were very good, well packed, and arrived in record time. (I have heard nothing but good about Mr. Smith's plants!).

Mr. G. Lowe writes from 19 Seaford Avenue, Osgodby, Scarborough, Yorkshire, and says that he has no problem with smoking affecting his fish as he has his pump, a Rena Super—which he finds excellent (as do I)—situated in the loft. He loses little or no air pressure even with 50 feet of tubing. He has no problem with algae not growing in his marine tank as, within one week, there is a pleasant coating of green algae. "Gro-lux" lighting is used. He finds that the white of the coral and gravel, and the brilliant colours of the fishes, are the main attractions of the marine aquarium. He considers this a splendid feature in an excellent magazine.

The third photograph shows one of my female guppies which is breeding normally. It's some time now since I typed Mr. Dotchin's letter, and my comments on the set of guppies which just would not breed. The saga has now come to an end. All of the guppies which would not breed have now died—with the exception of the young male, which was from a different strain. I was unable to identify the cause of the deaths but the fish were obviously suffering from some ailment—yet the young male which was

introduced was not infected or affected. Unfortunately the isolated troubles in N. Ireland have affected aquarists such as myself in that one of the main airlines has decided against carrying certain types of freight. This is emphasised by the fact that aquarists such as myself, who live outside Belfast, are not at all keen to go there to buy new fish, so my stocks are gradually falling off. I wish now that I'd brought some new fish home with me from London.

I've "gone mad" again with my photographic attempts and, following some advice given to me by Mr. Perkins, when we met last month in London, I've bought myself an enlarger, and set up an "on and off" darkroom in the bathroom. The guppy shot and that of the *Cabomba* were ones which I photographed, developed, enlarged, printed and developed myself. I've a lot to learn yet. The first photograph was enlarged by a professional firm. I hope to improve—if I can get any more new fish to photograph!

For next time please send your opinions on the following: (1) Have you had any experience of growing aquarium plants with red-coloured leaves? (2) Have you found that *Cryptocoryne* and *Aponogeton* species have any effect on each other when grown in the same tank? (3) What are your views on showing fishes? (4) Which is your favourite type of aquarium thermometer, and why? (5) Have you had any experiences with blue Discus? (I'd love a pair but cannot think of any way to get hold of them. Any suggestions?). Finally, my annual question: (6) What inexpensive Christmas present, for the aquarist, would you most like to receive?

OUR READERS WRITE *Continued from Page 261*

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BILL DEVISON, B.K.A. Secretary

Swordtail/Platy Hybrids

I am writing to tell of my hybridisation between a male albino swordtail and a female red wagtail platy. The result was a mixture of four different variations in colour. There were 25 per cent of each type. They were:

- | | |
|-----------------|--------------------|
| (1) Red | (3) Albino |
| (2) Red wagtail | (4) Albino wagtail |

The temperature was 73°F.

I have also had a cross between a male red swordtail and the red female wagtail platy mentioned before. The results were reds and red wagtails.

I would also like to say that I had a tank overcrowded with guppies so instead of killing them I placed a few in our garden pond. I have since seen them and most are still living. They are in with goldfish, golden orfe, shubunkins and a fantail.

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MARTIN WINGFIELD.

HERPETOLOGICAL NOTES

by Stephanie Peaker

Chamaeleons outdoors

Chamaeleons require a rich and varied diet if they are to survive. In addition a number of the small species can be kept in outdoor enclosures during the summer and even into autumn. A useful method to vary the diet of hard chamaeleons is to release them in a small bush and attract insects to the site with meat, fruit and other foods. Since chamaeleons may fall to the ground and wander off, a large hoop of hardboard or similar material should be placed around the tree to the limit of the farthest branch. Various baits to attract insects can then be hung amongst the branches and the lizards can enjoy a wide variety of food.

Provided that the foliage is fairly thick there is little danger from predators, but if protection is required then a large cage such as is used to cover fruit trees completely clear of the branches will suffice. If montane species like *Chamaeleo hoehnelli* are kept under such conditions interesting behaviour will be seen throughout the day. For example, in the early morning the lizards will move onto an exposed branch, flatten themselves towards the sun and darken to absorb radiant heat. As they become warmer they lighten to camouflage coloration, become more elongated and start to move about in search of food. The bush on which they live should be sprayed with water every day to allow them to drink but especially if the foliage is rather sparse, a shelter against heavy, prolonged rain is advisable. Incidentally there is no reason why chamaeleons kept under such conditions should not breed freely.

Kinixys

An interesting group of land tortoises is found only in Africa. There are apparently eight species in the genus *Kinixys* distributed throughout tropical and southern Africa but of these only one is commonly imported, Bell's *Kinixys*, *K. belliana*. The group is interesting in that the carapace is hinged between the 7th and 8th marginals and can be moved down to protect the hind limbs. The hinge is hardly present in the young, developing as the animals grow. The degree of protection afforded by the hinged carapace is not nearly as complete as that in the box tortoises (*Terrapene*) and I personally wonder whether this was developed as protection or as an aid to locomotion. After all the young, which do not have the hinge are in most need of protection against predators and I feel that its purpose is perhaps to allow more

freedom of movement by the hind-limbs. Indeed in some specimens the hinged rear portion hardly moves at all while in others it will move only a centimetre or so.

Like most tropical species, the members of *Kinixys* are not cheap to feed. Always preferring, it seems, the most expensive food when other items are plentiful. Fruit is preferred but they should be encouraged to eat herbage as well. Roughage should also be given to these herbivorous reptiles and chopped, good-quality hay should also be mixed with the fruit or offered separately especially in winter when greens are scarce.

Being tropical these tortoises require heated accommodation in winter, and, indeed for most of the year except in the south-west. The usual vivarium is not suitable for any large tortoise and a larger area is required. I shall be dealing with the care of tropical tortoises in a later article and shall make more detailed suggestions there.

As I have mentioned, the commonly imported species is *Kinixys belliana* which is found in savanna country over much of Africa. Many different colour varieties can be seen. Some individuals are rather dull but others have black and/or yellow-orange markings. Another species sometimes imported is the Eroded *Kinixys* or Eroded Hinge-backed tortoise as it is sometimes known and this form known as *K. erosa* is found in the rain forests of West Africa. Like the Gopher tortoises of north America this species has a forked extension to the plastron which it uses to turn rivals over on to their backs. The rear marginals are serrated and flared and the carapace is usually dully brown in colour. For a tortoise this species has long legs on which it scuttles around. This forest dweller prefers shade and this should be remembered when designing an enclosure for them.

I have not seen *K. erosa* on the market this year, but a number of *K. belliana* have been imported priced from £2.75 for a 3 in. specimen to £3.5 for one at 4 in. As with most reptiles I advise that at least two or even more should be purchased, since most tortoises prefer company and they are far more interesting when kept in groups.

Eyed Lizards

The Eyed Lizard (*Lacerta lepida*) from Spain now only rarely appears on dealers' price-lists. I have heard that this is due to difficulties with transporting them in Spain. If one or two can be obtained they

are an excellent addition to a collection of European reptiles. Growing to a length of two feet or even more, it is a very heavy, thick-set lizard and qualifies for the title of largest European lizard. The adults are normally deep green above with blue and black ocellations along the flank, together with spots of black and yellow. The young when imported are similar in size to Green lizards and are more sombre in colour than the adults. The ones we had were blue-grey with blue and yellow blotches along the flank. The young ones can be recommended since they can be housed in an outdoor reptiliary with other European lizards and can also share the same heated accommodation in winter. Keeping the adults is however a different kettle of fish. Few outdoor reptiliaries have sufficiently high walls to prevent them from climbing over and very often the weather is not sufficiently warm to let these large lizards warm up to normal activity temperatures. If they are housed indoors they must have sunlight or some ultra-

violet light to keep them healthy. The only other European lizard that can be housed with them are adult Dalmatian Green Lizards of a similar size.

The usual insect and worm diet is ideal for the young but the adults prefer something larger—locusts, pink mice, etc.; some will also eat meat and soft, sweet fruit, like peaches and apricots, but our young ones would not accept any fruit. Like all typical lacertids, the Eyed Lizard likes to bask and clamber on rocks and low branches. The high temperatures of its natural habitat—southern France, Spain and Portugal must be remembered when planning the heating.

A smaller, attractive species is found in south and west Spain, Schreiber's Lizard (*Lacerta schreiberi*). Basically green, there are patches of black along the back and sides. The young have a brown back with ocellations of yellow or blue bordered with black along the flank. Again, a species that can be recommended.

FISH FOOD REVIEW

HYKRO MULTI FLAKES are made by Hykro of Denmark, and distributed in Britain by Peterama Ltd., Church Road, Harold Wood, Romford, Essex. Recommended prices are: 14p for the standard size, 23p for the large size, and 49p for the breeder size.

This new food bears the well-known Hykro name and the prices compare favourably with competitive brands. The food consists of flakes in a variety of colours and sizes. Some of the flakes are quite large; others are of medium size. The food is thus suitable for a wide range of fishes. The makers claim that it cannot cloud water. As the food is easily crushed between finger and thumb the size of particles can easily be reduced for even the smallest fishes.

Hykro Multi Flakes contain fish meal, fish roe meal, fish-liver and glandular meal, tropical crayfish meal, insect larvae meal, dehydrated kelp meal, mussel meal, brine shrimp meal, wheat germ meal and cod liver oil—a combination which my fishes obviously liked as they ate the food with relish.

The analysis is given as: minimum crude protein 45%, minimum crude fat 3%, minimum crude fibre 10%, and maximum moisture 9%. The instructions on the handy, plastic container state that fish should be fed lightly several times a day.

I have only one very minor complaint about the food and that is that some of the flakes seemed to begin to sink in the water quite quickly after food was placed on the water surface—however, they were soon eaten by middle swimming fishes.

This food would make a good, standard diet for a wide variety of fishes.

B.W.



KOI ON THE BOTTLE

Mrs. Hilda Allen of Peterborough, a member of the British Koi-Keepers' Society, sent the colour transparency from which the above black and white reproduction was made. It shows "Fred," a Koi, sucking a baby's feeding-bottle which contains a proprietary brand of baby's "Creamed Fish Dinner." Fred is being jostled by another Koi, Sylvia, who impatiently awaits her turn at the bottle. Fred and Sylvia, both 6 years old, are about 14 inches long and among the luckier members of Mrs. Allen's 16 strong Koi community because their mouths are large enough to cope with the bottle-teat. Along with her Koi, Mrs. Allen runs three Hi-goï, two Crucian Carp, two Golden Orfe and two Tench, all in a thousand gallon pond.

(Details of the British Koi-Keepers' Society may be obtained by writing to 13, Nutley Lane, Reigate, Surrey).

"HAPPY VICS"

by Bob Heath



Haplochromis nigricans (male) one of six species which have similar coloration: Iridescent Blue, Dark vertical bands, Scarlet tail and scarlet edge to dorsal fin

EVER ACHIEVED an ambition? Really done something you set your heart on doing? I have. Chiefly because I thought my life was being wasted idling in hotel rooms, it happened. Terrible places, hotel rooms. Clean, which is good. Tidy, which is depressing. Not quite quiet, which is infuriating. And they are ever so lonely. You look at yourself in the mirror, have a bath, dress: and what can you do? Read. Have a shower. Look at yourself in a different mirror. Read. Or go out and spend all your money. After ten years of this, as a BOAC flight-engineer, I finally took myself to task and decided to do something with my off-duty time abroad.

Collect fishes for somebody. That should offer a challenge. It did. For example: A letter in my post today from a hobbyist in U.S.A. tells me he is

searching for a dwarf African cichlid called *Pelvicachromis subocellatus*. Probably going under the genus of *Pelmatochromis* . . . and thought to be available in Europe—(Anybody got any by the way?) Once knowing from which part of Africa they can be caught, I will attempt to obtain a few. Adventures of one sort or another are bound to be part of doing this.

As a result of my activities you will not be surprised to learn that during the last four years I have met a lot of interesting people and seen a few wild places. Eventually it dawned on me that I could be useful. I would make an attempt to build a set of colour slides for a range of pretty *Haplochromis* found along the various shores of Lake Victoria in Uganda.

The more I thought on it the more worthwhile a task it seemed to be. Here I had a chance to actually

do something constructive in the way of preventing pollution and destruction of our environment by adding to the understanding of our complex ecology. But I am a rotten photographer. Pictures of the patch of water from which a beautiful fish has just departed would be my contribution to science! I knew that. Answer . . . take the fish to a professional fish photographer. Yes, it surprised me at first to discover a man fully occupied photographing fish but it needn't have done; after all I watch the programmes of Jacques Cousteau, who is also a professional fish-photographer. Meeting Andrey Roth is a story in itself, as are the details of my meeting Dr. P. H. Greenwood, Curator of Freshwater Fishes, British Museum (Nat. Hist.). Dr. Greenwood is the

contribution to science.

So what is it I have achieved that I had set my heart on doing? I have landed over a hundred of these fish in U.K. Cost me rather a lot of money, and taken over two years, but I've done it. To be fair, it was David Blair who really made it possible and I fully expect David to submit learned articles about these Happies for publication in this magazine. You see, it will only be possible to get hold of a full range of the species in the Lake by having a fisherman established catching them regularly. What a problem this proved to be! Just about everything you must not do to fishes intended for aquarium purposes, is a natural reflex action from Uganda fishermen. The very explanation of my intention to keep them alive



Macropodus bicolor (female) showing marbled pattern which some females (30%) appear to develop. Snail-eating species

authority on the fishes of Uganda. All scientific papers describing Victoria *Haplochromis* are his work. What a pity most of them are out of print and unobtainable, just as they are apt to be requested by intelligent hobbyists who keep my Happy Vics. I will do my best to push out gen from them into the pages of *The Aquarist* if interest is shown. He agrees that the inclusion of photographic slides, recording the live colours of these fish, will be a contribution to science; an exciting extension of his work. Undoubtedly Dr. Greenwood is a brilliant scientist; moreover I am particularly appreciative of his ability to pitch instruction at the exact level of my understanding; a rare gift among boffins. It will be a pleasure to help him build his records, if I am able, just because he is a nice person apart from any useful

in tanks was enough to get me certified. A reasonable analogy would be to have a Masai warrior, in flowing robe, complete with spear knock on your door with the following request. . . . Could you get him a regular supply of undamaged green-fly and ship them alive to Africa. He would pay you a monthly wage of £1,000 and arrange supplies of special banana leaves for packing. All you had to do was carefully tie a label on each aphid to show how it was different from all the others you had caught. Put all similar ones in the same bag and chant the magic words: "Oxygen-in-polythene-bags." His need was to set up decorations in his hut that would be of interest to guests because these animals were different from their usual garden herds of elephants, giraffe, etc. Now you begin to see my problems!

Seriously, I expect a lot of these fishes to become popular with aquarium keepers and I trust the demand for the more attractive ones will keep the scheme running as an export business from Uganda. In this way I hope to eventually obtain the full range of Happy Vics for Andrey Roth's camera and Dr. Greenwood's records.

Having touched briefly on what I am doing, let us look at the activities of readers of this magazine. Sitting back thinking on the prospect of an initial aquarium or another aquarium, I bet. Why not try a community tank of cichlids? I believe them less trouble and more interesting than the usual tank of neons. For example, let me tell you how these *Haplochromis* (say it . . . hap-lo-chrome-iss) from Lake

place. Any female within signalling distance of a mature male will be given a full display of all his brightest colours. He does not appear to know or care what species she be. The girls are not so easy—beginning to sound like Jilly Cooper's column. With the prospect of three weeks parental duties on an empty stomach, these girls insist on being overweight before responding to the male proposition. Once finished spawning, with a male of her own species only, she will brood fertile eggs in her mouth for a couple of days. During the hatching period the flow of water through her mouth and over her gills keeps the eggs well cleaned and oxygenated. After hatching, the babies are retained in her mouth for weeks, being permitted to go out and play for



Haplochromis pallidus grows to about 2½"-3" in the wild. Greedy species and inclined to bossiness. Not good company for smaller species

Victoria behave. At least my understanding of their behaviour from a lecture of Dr. Greenwood's.

Young fish tend to stay together in loose shambling groups. All much the same dull-grey colour. As they mature the males start to show pretty colours, a lot of them becoming as vivid as marine fish, but most of them as changeable as moving petrol on a summer rainpool. A few of the females in the 200 plus species are as attractive as the males but in general the females are drab.

When a male grows fully mature he will become a 'loner' in a territory of his own. This territory he will defend against all other males and particularly from his own species. Very seldom do rivals actually fight, although it is difficult to persuade an observer they are not. Exhibition display is always taking

short intervals eventually. There is always one naughty fry who does not return on cue. Mum gets proper upset until he does come back. Gradually more and more of them become difficult to discipline until mum finally runs out of patience and spits them all into a shallow pool to get on as best they may. She swims off for a meal. In no time at all she is ready for breeding again. The little ones tend to stay together in loose shambling groups . . . and that is where we came in.

There are many more aspects of cichlid behaviour I will tell you if enough interest is shown, but the sight of a starving skeleton of a 4 in. fish, with a head and cheeks as big as her body, spitting out 40 to 50 husky little fish, each as long as my finger-nail, is enough miracle for one article.

A cichlid-keeping clique is rapidly taking over from "community" coterie in the U.S.A. and Europe. This is understandable because cichlidae show intelligence. Just as you can become friends with a dog, cat or horse, so is it possible to build a personal relationship with a cichlid. In my view anybody who has space for a 3 ft. tank or bigger, will be well advised to start with cichlids. Smaller tanks than this will not do unless restricted to dwarf cichlids, a number of which are suitable for mixing with neons, etc. Bigger 3 in. to 5 in. fish need gravel, rockwork and suitable plants to make them happy. Do this right and the tank will not only be attractive in colour, it will be more interesting than all the TV adverts. And most of the programmes!

You've got to be a bit dim if you are unable to get them breeding and the young have a market value. Alex Simpson, of Simcol Pets, and I are attempting to become the Cichlid Centre for U.K.—chances are we will buy your young fish. It is a practice that seemingly attracts housewives, students and professional people in U.S.A., who also trade by post.

You will be in competition with my export business

from Uganda. Each of us having our own particular advantage. My wild fish will not sell unless I can identify them as potential coloured adults or ship them as actual coloured adults, the latter being the only ones I can identify. Consequently I can only ship about one fish in 1 lb of freight. Airlines charge like wounded buffalo for freight and this means the fish I send will never be as cheap as neons. Your fry, on the other hand, will come from known parents and can be expected to grow into known colours. Identified fish will breed in your tanks at two or three dozen per spawning and you can sell them when about 1 in. long. Hobbyists will be able to see my wild adults and buy your named youngsters for a lot less than pairs of adults. Of course, if they have to stay in the pet shops for months and months before showing adult colours, you will have added to their price because of the overheads.

Once the cichlid cult becomes popular there will be customers for both sorts of supplies. Now, do I work on the assumption that the U.K. will be starting to keep cichlids or shall I take all the advice I have been given and ignore my own country by shipping direct to U.S.A.?

SPAWNING

Labeotropheus trewavasae

by S. & A. Cass

CICHLIDS have always been one of our favourite fish and when the new species from Lake Malawi came on to the market, their vivid colours made them an absolute "must." In fact, breeding them became one of our main ambitions. However, because of their nasty disposition, especially the males, this has been far from easy, one of them, usually the female, has nearly or actually been killed at each attempt on our part. Also, their price usually prevents the average fanatic from purchasing several pairs to cover any losses.

The first pair of malawis we had were a full-grown pair of *Pseudotropheus auratus*, which were purchased in 1966 and cost £7.50. Because these fish were new and there was very little known about them, they were placed in the same tank. We learned that they were vicious when we went into the fish house one morning and found the female dead on the bottom of the tank—killed by the male.

This unfortunate setback did not, however, prevent us from later purchasing a pair of *Labeotropheus trewavasae*, a fish which we fell in love with immedi-

ately despite the fact that the cost was £15 for the pair. They were placed in a 48×18×18 in. tank divided by a removable glass partition. Unfortunately, the female managed to get into the male's half and he killed her. This further setback made us even more determined to succeed and so we sold the remaining fish, made up the difference and returned to the shop to spend another £15 on the only pair left in the shop. We came very close to spawning this pair, the female making several dry runs before the male seemed to lose his temper and nearly killed her. Bad luck struck again when the female developed dropsy and died.

A word about the colour of these fish is probably a good idea at this point. The male has a vivid purple/blue body on which are visible several darker bars of the same colour. His dorsal fin is bright orange and may or may not show a few light blue eye-spots in the rear portion depending on the fish's age. (If a fish is young these eye-spots will not be there but will appear as the fish becomes more mature). Also prominent in the dorsal fin tip are several light blue streaks which seem to become more prominent with

age. The anal fin is light blue on which are about 3-5 dummy egg spots. These spots vary from specimen to specimen as to the actual number. The female is rather drab in comparison, being a black and tan mottle all over.

Despite the disasters we had already suffered with the "mbuna" as the natives of Malawi call them, we obtained another pair of *L. trewavasae*. These were the pair we have now. They were considerably cheaper, costing £7.50 but they were in a far worse condition, suffering badly from white spot and malnutrition. Both fish were placed in a separate tank to which a strong solution of Methylene Blue was added. They were then left for about two weeks and then transferred into the same 48 in. tank that the other *L. trewavasae* had been in. They were kept separate for about two months during which time they were fed on sheep's heart and shrimp. The male grew to about 4½-5 in., while the female grew to about 4 in. In each half of the tank caves were formed with plant-pots, these being preferred to rocks because they are much lighter. Two pieces of slate were placed in the tank, one on each side of the glass. The first attempt to spawn these ended in the usual way with the male nearly killing the female.

Then, on the 22nd August, 1971, the small nipple-like protrusion which was the female's breeding tube was seen to be extended. This tied in with the fact that the female was not eating as well as she had been doing and was spending more time in the plant-pots in her half of the tank. So the glass partition was removed. At first it looked as if the same familiar thing was going to happen when the male flew viciously at the female who hastily took refuge in a plant-pot. A few minutes later, however, the picture changed.

Both fish returned to their own halves of the tank. Then the male ventured into the female's half where he changed his conventional colours for an electric sky blue. To add to this his head became a rich blue-black. With his brilliant orange dorsal fin extended to the full, contrasting sharply with the rest of his body, he looked magnificent as he darted about the tank.

Then he proceeded to make violent dashes at the female who emerged from her hiding place. It was noticeable that the male never once actually made contact with the female who now followed her mate into his half of the tank where she began to clean a piece of slate. The male now began to quiver violently in front of his mate. At this point we decided to leave them to it and returned about two hours later to find the female with a mouthful of eggs and the male darting about just below the surface. He did, in fact, seem to be guarding the female, his position just below the surface indicating that in the wild he would have a good view of the surrounding area and would be able to see any intruders who entered the vicinity.

Not wishing to disturb, we left them alone and returned at about 5 o'clock to find the female hiding in one corner of the tank behind some plants which had been placed in the tank two days earlier. In our experience this species does not uproot plants. Realising that the spawning was now over the male was placed in another tank and the female was left to brood. It seems that when we went in the first time and found the male guarding the female, all the eggs had not been laid and if we had stayed we might have witnessed part of the spawning.

At first, the female did not remain hidden as much as was expected. Instead, she swam about the tank not seeming to bother too much when anyone went into the fish house. In fact, for the first 5 or 6 days she came to the front of the tank seemingly asking for food. However, when some small pieces of shrimp were placed in the tank she took a piece, chewed it for about a minute and then blew it out refusing to eat it or any other food until she released her young. On the next Sunday, just 8 days after the actual spawning, it became noticeable that the female began to hide a lot more and then on the ninth day the actual egg-pouch was quite a lot larger indicating that the eggs had hatched.

Another noticeable fact was that now each time anyone went into the fish house and tried to look at the female, she turned sideways, so that the egg-pouch was towards the back of the tank, hiding the fact that she had babies. This behaviour continued for the rest of the brooding period which the books and other articles state is somewhere about 30 days. However, our babies emerged after only 27 days.

The date of the "emerging" was the 17th September, 1971 and the surprising thing was the actual size of the young—they were about ½ in. long. Somewhere in the region of 15-20 young were seen and we are still wondering how the female managed to get them all into her mouth. The actual colour of the young was a grey-brown which blended well with the surroundings and made an ideal camouflage. The female did not like us looking at her offspring and she flew at the glass, her fins erect, to defend them.

Just in case the female was hungry, some shrimp was placed in the tank. This she took and then, after chewing it for a minute or so, she blew some of it out for her young. Realising that she was able to look after her young better than we could the female was allowed to remain in the tank for the rest of the day.

In the evening (it was in the morning when the young were first observed) she was taken out, much to her disgust and annoyance and in fact she proved quite difficult to catch. Before she was finally caught she had made quite sure none of the young would finish up in the net by diving at the shoal of babies following her, scattering them and forcing them to take cover. We are quite sure that the safety of the

young was her prime intention and was not, as may be expected by some aquarists, to devour them. The young were fed on brine shrimp and screened *Daphnia* and at the time of writing are progressing nicely.

The above article is by no means a definite procedure as to how these fish or any other Malawi cichlids should be bred. It is merely an account of our experiences with these beautiful fish and, indeed, other aquarists may achieve success by using other methods, e.g. putting several fish in one large community tank and letting them sort themselves out. However, it should be noted that this group of fish are very unpredictable and this seems to indicate great intelligence, despite the fact that some, especially the

Labeotropheus genus (the *fuelleborni* and *trewavasae*) with their overhanging top lip, look really stupid. Their unpredictability is illustrated when two articles on their care and breeding are compared, such as this one and Mr. C. W. Gorwill's article in the September, 1970, issue of *The Aquarist*. Where his fish spawned in a plant-pot ours, it seemed, spawned on a slate and where his male was very peaceful ours was extremely vicious! It seems that the moral which emerges from this story is: "If at first you don't succeed, try, try again," and if there are any aquarists trying to breed these difficult but gorgeous species may we take this opportunity to wish them the best of luck and hope that they have every success.

The Garden Pond In Winter

by A. Boarder



Veiltails seen through hole in ice covering pond.

THE CARE of the garden pond during the winter is a very important task and one which should not be neglected. It is difficult to lay down any hard and fast rules for maintenance as there are so many features which may have to be considered. One of the most important factors as to the amount of

care necessary is the size of the pond. It needs little imagination to assess that the smaller the pond the more problems may arise in severe weather. Any fair sized pond could go through the winter with little attention whatever, whereas a small one would probably require quite a lot of attention if the

fish were to be kept safe and well throughout the winter.

The depth of the pond will also have a lot to do with the state of the water during this period and it is obvious that any pond less than eighteen inches deep will probably freeze up very thickly during a hard and prolonged frost. It must not be thought that it is the cold alone which could kill fishes in the pond when the ice covers it. It is more likely to be that foul gases may be trapped beneath it and these could kill the fishes. It is quite probable that there will be something decaying at the base of the pond, and if it has not been cleaned out before the winter there is sure to be a quantity of mulm at the bottom together with plenty of decaying vegetation.

The need for the late autumn cleaning out does depend, to a certain extent, on the size and depth of the pond, but the state of the water can also have an effect on how it will keep in a good condition during the winter. One should examine the water and if it appears to be foul in any way, it should be emptied and the pond given a scrub round before refilling. A good start to the winter season is more than half the battle as the better the state of the water at this time the more likely is it to go through the winter with no harm coming to the fishes.

It may be necessary to thin out some of the water plants but do not over-do this as plenty of underwater oxygenating plants will help to provide shelter for the fishes even if they are not active enough to provide oxygen.

The care of any youngsters which have been bred in the pond is a question which I am often asked. If the pond is a fair size and there are plenty of water plants therein, it may be that many youngsters will go through the winter in safety. The size of them will determine whether they go through the winter safely in the pond. Any fish which is at least two inches long over-all, will normally be quite safe. Most goldfish do not eat the youngsters once they get over an inch long; before that they can be mistaken for the larvae of mosquitos, etc. If the pond is small or shallow it will be safer to take some of the youngsters indoors so that they stand a better chance of survival. The severity of the winter will have a decided bearing on whether the young live or not. If we get a winter no more severe than was last year's then many young fishes in the pond will be quite safe, but a winter like the one in '62-'63 is likely to prove too much for very young fish.

I have had young fantails go through the winter out of doors when they were not much more than an inch long, but this was not in a very severe time and the water was fairly deep and in good condition. If young fishes are taken indoors one must be very careful to see that they are not over-crowded. Also

it is not, as may be thought, a good idea to take water from the pond in which to keep the fish. It is probable that the pond water will turn foul in a short space of time and the fish would die. Some tap-water which has been allowed to stand for a few hours is more likely to be better. Another point to watch is that these young fish must not be overfed with dried foods during the winter unless one has some form of artificial heating for the tanks. Goldfish, and many other kinds of fish, do not eat as much when the water is cold and so if too much food is given the water will become foul and the fish will die.

Once the pond has been cleaned out, if this was considered necessary, there may not be much more to be done until the first hard frost arrives. Whether the ice should be opened or not may depend on the size and condition of the pond. Obviously a very large pond would be a much safer place for fishes than a very small one. The consequent treatment will then depend on the circumstances. Any medium or small pond should have the ice opened every day. This will enable any foul gases to escape and will allow any fresh oxygen to enter the water. It must be remembered that the colder the water the more oxygen can it hold and so one need not worry too much about this condition. The method to adopt when the pond freezes over will depend on the facies of the pondkeeper. Some have specific treatment which is always used whereas others may find that the same treatment does not work with their pond. So many methods are used that it must be left to the individual person to choose that which suits him best. My own method is to stand a water-can of boiling water on the ice. This soon thaws out a neat hole and the can can be removed at any time later on as it is saved from falling into the water by the spout and handle.

The ice should never be broken with a hammer or similar object as the fish could be stunned in a small pond if the ice was struck hard. The ice can be chipped in a circle with a pointed instrument and a hole made that way. There have been many ideas put forward as to what to do with the frozen pond. Some people will make a small hole and then lower the water slightly. The idea is that the water under the ice will not then freeze up again. When I tried this scheme it was all right as long as there was not another severe frost, as if so, the water beneath the ice would once more freeze up.

The idea that a pond should always be constructed with sloping sides so that the ice would slide up as it formed is just daft. I have even heard this idea put forward on television, but I can assure any reader that once a little ice forms on the sides of a pond, nothing on earth will shift it a fraction of an inch until it thaws out. Another idea I have heard

suggested is to place a log of wood or a rubber ball on the water as it is said that this will stop any cracking of a pond due to expansion when it freezes. This again is a nice thought, but once a little ice forms around the object then any more than an inch or so away could never be affected by the log or ball, and just as much pressure could be exerted away from the object as if it had not been there.

A good method for keeping at least a small hole open is to use a heater as supplied for the purpose by dealers or even an ordinary tank heater will suffice. I have used a 100 watt heater during very severe weather and have found it to be quite effective. I only switch it on when there is a hard frost and a small hole is kept open all the time. I have noticed that the fish will often come and stay near the heater during icy conditions.

The question of feeding the fishes during the winter often arises and a lot will depend on the size of the pond, the number and sizes of the fishes and the state of the weather. I have yet to experience a winter when there has not been at least one mild spell. Sometimes it can be very cold before Christmas, and then a mild spell can set in for a week or so. During such a mild spell it may be noticed that the fishes in the pond have become more active and appear to be looking for food. At such times it is quite in order to give a little food, but I recommend that only live food, such as garden worms, should be used. Goldfish will even take these when there is

ice on the pond, but I do not think that it is necessary to feed when it is so cold. Goldfish, and many other kinds, eat at their maximum when the water is on the warm side, providing there is sufficient oxygen in the water. Once the water cools down the appetites of the fishes will decrease considerably. Most of the fish we usually keep in ponds could go right through the winter without being given any food whatever. It should be realised that in any well-established pond there will always be something edible for the fish.

During warm weather the fish in the pond can digest their food very quickly, at least any type such as the goldfish. They have no large stomach and so cannot take a large meal at a time. This means that they need to feed little and often. As long as the water keeps fairly warm they can digest their food fairly quickly, and so be ready for more within a few hours. Once the water turns cold it takes them longer to digest their food and so they require far less. Although goldfish do not become quite torpid in the winter, their metabolism slows down considerably and so their food requirements are lessened accordingly.

If a pond has been frozen over for two or three days or more, it is a good idea to remove most of the ice when it thaws a little and freshen up the water. If it looks murky remove a quantity and replace with fresh.

British Freshwater Fishes

by A. Boarder

THE SALMON

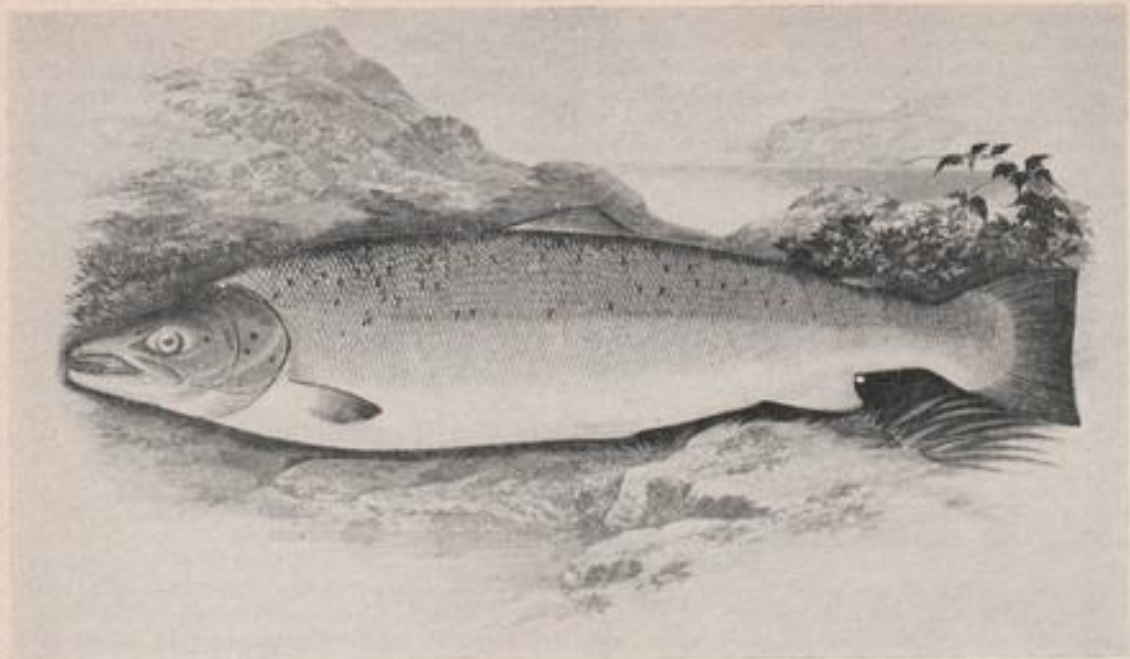
THE SALMON is a very important fish for the dedicated angler who has the means to indulge in this fascinating hobby of fly or spin fishing. It is the game fish par excellence and fishing rights in the rivers where it may be found are jealously guarded and permission to fish is either restricted to clubs or to those who can afford to pay a handsome price for the privilege of fishing in such waters. Whether it is a marine fish or a freshwater one is sometimes a matter for dispute, but as it returns to freshwater rivers to breed it could be termed a freshwater fish. After all those birds which migrate, such as the swallow, nightingale, etc., can be termed British birds as they breed here and not in the tropical regions where they spend the winters.

There are several species of Salmon found in various parts of the world and are known as: Humpback or Pink Salmon; the Dog Salmon; the Chinook, Quinnet or King Salmon; the Silver Salmon or Coho, and the Sockeye, Blueback or Red Salmon.

The Chinook is a very valuable species and can reach a length of five feet and a weight of up to 100 lb. The Humpback is a small species reaching about two feet in length and six lb. in weight.

Salmon are found in most rivers of the British Isles except where there is pollution. The Thames once had plenty of Salmon, but the pollution from factories and sewage has made the river unfit for Salmon, more's the pity. The Salmon is rather similar to the Trout in shape and colouring, but the caudal peduncle of the Salmon is narrower than that of the Trout so that it can be held firmly above the tail whereas the Trout could slip from the grasp. Also the tail is more forked than that of the Trout. Both fish have the adipose fin which is seen in all the species of the family.

Most of the feeding is done in the sea and the fish run up the rivers to spawn in late autumn and winter. Such fish are in prime condition when they first start their swim up to their favourite spawning



grounds. These are usually in the upper reaches of the rivers where the water is very clear and fast flowing. In some instances the fish will swim up into such shallow water that their backs are uncovered. Their swim up some of the fast running rivers is quite a feat of strength and where necessary the fish can leap up small water-falls with prodigious efforts, at times falling back with a huge splash only to try again after a slight rest.

Once the upper reaches of the river are found to be suitable, the fish will make a redd, which is a shallow hollow in the gravelly bottom. This is formed by the fish heading up-stream and by vigorously wavings of the tail, a hollow is formed. The eggs are then laid and the male, in attendance, fertilises them with his milt. Still heading upstream the female makes another redd, and much of the gravel displaced will help to cover the first lot of eggs. The eggs are quite firm with a tough covering so that they can withstand the weight of the pebbles covering them. The period of incubation can be as long as twenty-one weeks according to the temperature of the water. A mature female Salmon can lay up to 900 eggs for every pound of its weight.

The tiny alevins, as the fry are called, are provided with a yolk sac which sustains them for some time whilst they hide in the gravel. They do not become free swimming from the redds until they are about an inch long and they then remain in very shallow

water, feeding on any minute creatures which they can find among the stones. In two years from hatching they can be as much as six inches long, providing they have been able to find sufficient food. These young Salmon are then known as Parr. Some Parr migrate to the sea in just over a year, whilst others may not do so until the third year.

Once the Salmon have spawned they are very weakened and many never recover from their exertions. It is thought that Salmon rarely live more than seven or eight years and their weight at this age can be about 40 lb. A Salmon was caught in Scottish waters which weighed 84 lb. The river Wye is a well known river for Salmon fishing and fish of up to just over 40 lb. are caught there.

The food of the Salmon varies as to where the fish lives but it can be stated almost certainly that most of the food is composed of live creatures. When in the sea the fish will eat any small fish, and even fish as large as herrings are taken. Salmon are not easy fish for aquarium culture as they are so fond of freshwaters that it would only be in a very large aquaria well supplied with freshly oxygenated water that they would survive.

The interest shown nowadays in river purification is a very good thing and it is to be hoped that several rivers which at present are too polluted for the Salmon will one day be pure enough for them to return.



from AQUARISTS' SOCIETIES

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

THE Tonbridge and District A.S., F.B.A.S., have had a particularly busy period lately which has not been helped by many letters being wrongly addressed. The secretary is I. T. Mathieson, 33 Norrison Way, Five Oak Green, Tonbridge, Kent. Gerry Greenbush of Kingston and District A.S. used the entries in a table show to clarify some points in a recent talk on Class G, A.O.S. Catfish. He also judged the Table Show. The following were class winners: Mrs. D. Mathieson—Female Guppy; R. Taylor, Class E, and J. Bellingham, Class G. At a more recent meeting the vice-chairman and the secretary captained two teams formed of all members present in a quiz. There was a complex scoring structure and at the end only ten points separated the two teams. At that meeting, Brian Clare, F.B.A.S., judged the Table Show. Class C was won by W. Rood and Class Ca was won by J. Bellingham. The additional monthly meeting for the autumn and winter seasons has also commenced. The first meeting took the form of an inter-club match with North Kent A.S. in which each club chose three of the classes. This was judged by D. Soper and C. West, both F.B.A.S., assisted by C. Corbin of Mid-Sussex A.S. The result was a resounding victory for North Kent by 38 points to 22. Class winners were P. Cottle, N.K.A.S., Classes G and N; K. Saxby, N.K.A.S., Classes H and QRST. Home team winners were Mrs. D. Mathieson, Class Eb, and Mrs. I. Bellingham, Class L. Mrs. Bellingham's *Acanthopthalmus Myersi* was also Best Fish in the Show with 82 points. The entertainment was a slide show hired from Hendon A.S.

THE results of the Weymouth and District A.S. were as follows: Barbs: 1 and 2, M. Fischer (Yeovil); 3, T. Hutton (Weymouth); 4, A. Marshall (Basingstoke). Characins A.O.V.: 1, K. Forrester (Weymouth); 2, G. Carter (Bracknell); 3, P. Carter (Weymouth); 4, T. Hutton (Weymouth). H. H. & C.: 1 and 2, M. Poole (Torbay); 3, K. Forrester (Weymouth); 4, N. Jennings (Southampton). Cichlids A.O.V.: 1, Mrs. I. Strange (Basingstoke); 2, Mrs. M. Lane (Amesbury); 3, Mr. Woolley (Torbay); 4, M. Strange (Basingstoke). Angels A.O.V.: 1, A. Cox (Weymouth); 2, W. Horwill (Plymouth); 3, A. Peal (Weymouth); 4, Mr. Cleall (Weymouth). Dwarf Cichlids: 1, M. Strange (Basingstoke); 2, M. Crocker (Exeter); 3, Mr. Woolley (Torbay); 4, P. Lawrence (Bristol). Labyrinth: 1, A. Blake (Basingstoke); 2, A. C. Worth (Weymouth); 3, T. Mudge (Exeter); 4, G. Orton (Weymouth). Siamese Fighter: 1, Mr. Fischer (Torbay); 2, Miss R. Matthews (Torbay); 3, Mr. Woolley (Torbay); 4, Mr. Bowyer (Totnes). Catfish A.O.V.: 1, M. Medway (Weymouth); 2, H. Peal (Weymouth); 3, Mrs. Turner (Weymouth); 4, Mr. Rendell (Yeovil). Corydoras and Branchis: 1, P. Carter (Weymouth); 2 and 4, G. Orton (Weymouth); 3, M. Squibb (Weymouth). Rasbora A.V.: 1, G. Carter (Bracknell); 2, M. Squibb (Weymouth); 3, R. Bowyer (Totnes); 4, M. Medway (Weymouth). Dantios and Minnows: 1, M. Carter (Bracknell); 2, G. Carter (Bracknell); 3, A. Blake (Basingstoke); 4, F. Casman (Torbay). Loaches and Botia: 1, M. Carter (Bracknell); 2, T. Jones (Weymouth); 3, S. Studley (Weymouth); 4, A. Cox (Weymouth).

Tropical Egg-layers: 1, T. Jones (Weymouth); 2 and 3, T. Hutton (Weymouth); 4, A. Cox (Weymouth). Pairs of Fish: 1, M. Poole (Torbay); 2 and 3, R. Cor (Bath); 4, Mr. Rendell (Yeovil). Guppies (Male): 1, M. Mansbridge (Southampton); 2, Mrs. R. Medway (Weymouth); 3 and 4, Mr. Bowyer (Totnes). Guppies (Female): 1, A. C. Worth (Weymouth); 2, P. Lewis (Bristol); 3, G. Charlton (Weymouth); 4, N. Jennings (Southampton). Sword-tails: 1 and 2, R. Hemmings (Ringwood); 3, T. Mudge (Exeter); 4, G. Orton (Weymouth). Platys: 1, A. Blake (Basingstoke); 2, 3 and 4, Mr. Rendell (Yeovil). Molies: 1, R. Cox (Bath); 2, 3 and 4, Mr. Bowyer (Totnes). Livebearers A.O.V.: 1, M. Strange (Basingstoke); 2 and 3, A. Blake (Basingstoke); 4, M. Bowyer (Totnes). Common Goldfish: 1, V. Collins (Yeovil); 2, 3 and 4, Miss C. Rendell (Yeovil). Shubunkins: 1 and 2, D. Langdon (Yeovil); 3, M. Matthews (Torbay). Twintailed Goldfish: 1 and 2, V. Collins (Yeovil); 3, M. Poole (Torbay); 4, A. Marshall (Basingstoke). A.O.V. Coldwater: 1, V. Collins (Yeovil); 2, M. Poole (Torbay); 3, Mr. Davidson (Didcot). Breeders (Egg-layers): 1, A. Cox (Weymouth); 2 and 4, M. Poole (Torbay); 3, W. Horwill (Plymouth). Breeders (Livebearers): 1, A. Blake (Basingstoke); 2, M. Mansbridge (Southampton); 3, T. Berryman (Bracknell). Best Fish in Show: Best Tropical Fish, Best Catfish: P. Carter (Weymouth), with a Corydoras Jull; Best Coldwater: V. Collins (Yeovil). Best Breeder's Entry: M. Strange (Basingstoke). Best Livebearer's Entry: A. Blake (Basingstoke). Best Cichlid: Mrs. I. Strange (Basingstoke). Highest Entered Class: M. Fischer (Yeovil). The new Society chairman is Mr. Forrester.

AT the annual Table Show of the Croydon A.S. there were 118 entries, and these were judged by Peter Ginger. Best Fish in Show was a Neon Tetra awarded to H. H. Whitshire.

THE Kelghley A.S. heard a lecture of introduction and illustrations of slides and colour films from Geoffrey Smith of Oakbank Grammar School about the school canoeing club which gave a very interesting insight into the sport. The results of the monthly Table Show were: Fish of the Month—Toothcarps: 1, Mrs. Gear; 2, Mrs. Beckett; 3, Mr. Mosley. A.O.V.: 1, Mr. and Mrs. Liddimore; 2, Mr. Taylor; 3, Mr. Heap. Novice A.O.V.: 1, Mr. Mosley; 2, Mrs. Taylor; 3, Mr. and Mrs. Liddimore. Junior A.O.V.: 1, Master Gunning; 2, Master Hargreaves; 3, Master Beckett. The winners of the annual awards in connection with the monthly Table Shows are: Fish of the Month: 1, Mrs. Gear; 2, Mr. Taylor; 3, Master D. Mosley. A.O.V.: 1, Mr. Taylor; 2, Mrs. Gear; 3, Mr. Mosley. Novice A.O.V.: 1, Mr. Mosley; 2, Master Mosley; 3, Mr. Hart. Junior A.O.V.: 1, Master D. Mosley; 2, Master Cuttings; 3, Master Beckett.

OFFICERS elected at the annual general meeting of Houghton and District A.S. were as follows: Chairman, T. Wrightson; treasurer,

A. Richardson; secretary, R. Apperley; show secretary, C. A. Enwright. The cup for the highest number of points was awarded to C. A. Enwright to hold in perpetuity after winning for three successive years. Meetings of the club are held on alternate Tuesdays at 8 p.m. in the Burn Hotel, Houghton-le-Spring.

AT the September meeting of the Chelmsford A.S. (aff. F.B.A.S.), the first half was taken up with Club business and discussion on future moves. Members took part in the judging of the Coldwater class of the Table Show. This proved to be interesting, the winners being K. Machin, M. Drake and R. Horse. In the Mini Tank class, which had a good number of entries, prize winners were K. Turner, Mrs. J. Henderson, T. Heath. The evening closed with a talk by J. Henderson on Breeding and rearing cultures.

OFFICERS elected at the annual general meeting of the Loughborough and District A.S. were as follows: Chairman, I. Purdy; secretary, D. F. Ridgeway, 84 Beaumont Road, Barrow-upon-Sour, Leics.; show secretary, T. Parry, 447 New Ashby Road, Loughborough, Leics. Meetings are held at The Herbert Morris Social Club, Market Street, Loughborough on the second and fourth Thursdays of each month at 7.30 p.m. and all newcomers would be made most welcome.

MORE than one thousand visitors came to the **Torbay A.S.** Open Show and there were 534 entries. Individual Class winners were: Barbs: 1 and 2, Mrs. N. Pudner (Plymouth); 3, A. S. Kirby (Plymouth); 4, J. J. Edwards (Llanrwst Major). Characins: 1, R. G. Lucas (Plymouth); 2, Mr. and Mrs. Williams (Rhondda); 3, B. J. Bowyer (Totnes); 4, T. I. Woolley (Torbay). H.H. and Cherdon: 1 and 3, M. Poole (Torbay); 2, M. Leeder (Plymouth); 4, J. R. Davis (Torbay). Cichlids: 1, T. Pass (Rhondda); 2, W. D. Hosking (Plymouth); 3, T. Hampshire (Yate & District); 4, J. C. Fiddock (Exeter). Angels: 1, Master John Edwards (Llanrwst Major); 2, J. J. Edwards (Llanrwst Major); 3, T. Hampshire (Yate & District); 4, Mrs. I. Gark (Plymouth). Dwarf Cichlids: 1 and 3, J. A. Bragg (Torbay); 2, Mr. Coome (Ilfracombe); 4, D. J. Vickary (Ilfracombe). Labyrinth: 1, Mr. and Mrs. M. Williams (Rhondda); 2, A. Bigh (Ilfracombe); 3, J. C. Fiddock (Exeter); 4, T. Mudge (Exeter). Siamese Fighters: 1, J. Rundle (Plymouth); 2 and 3, T. L. Woolley (Torbay); 4, J. C. Fiddock (Exeter). Egg-laying Toothcarps: 1, Mr. Burrows (Ilfracombe); B. J. Bowyer (Totnes); 4, R. A. Bennett (Yate & District). Tropical Catfish: 1, J. Blamey (Totnes); 2, J. Arscott (Ilfracombe); 3, B. J. Bowyer (Totnes); 4, T. Hampshire (Yate & District). Corydoras and Branchis: 1, Mr. and Mrs. M. Williams (Rhondda); 2, P. Cox; 3, Mr. Blamey (Totnes); 4, A. D. Kirby (Plymouth). Rasbora: 1 and 3, B. J. Bowyer (Totnes); 2 and 4, E. Barnham. Dantios and W.C.M.M.: 1, Mrs. R. Matthews (Torbay); 2, Mrs. P. Brown (Torbay); 3, R. Barnes (Torbay); 4, Master C. Tolcher (Torbay). Loaches: 1, D. J. Vickary (Ilfracombe); 2, 3 and 4, M. Poole (Torbay). A.O.S. Tropical Egg-layers: 1, H. L. Doubleday (B.M.A.A.); 2, T. Mudge (Exeter); 3, B. J. Bowyer (Totnes); 4, M. Poole (Torbay). Sexed Pairs: 1, M. Poole (Torbay); 2, Mr. and Mrs. M. Williams

THE SAFE CURE FOR FUNGUS
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(Rhondda); 3, R. Young (Totnes); 4, W. A. E. Smith, Guppies (Male); 1, 2 and 4; W. M. G. Reid (Plymouth and the F.G.A.); 3, J. Bragg (Torbay), Guppies (Female); 1, 3 and 4; W. M. G. Reid (Plymouth and the F.G.A.); 2, J. Rundell (Plymouth). Swordtails: 1, D. Atkinson (Plymouth); C. P. Pass (Rhondda); 3 and 4; F. Cox, Platies; 1, M. Leader (Plymouth); 2, Master M. T. Symonds (Plymouth); 3, H. Stoneman (Totnes); 4, W. G. Corrick (Tosmon and District). Mollies: 1, Mrs. P. Brown (Torbay); B. J. Bowyer (Totnes); G. Pass (Rhondda); 4, Mrs. Lay (Torbay). A.O.S. Livebearers: 1 and 2, D. Noble (Yate & District); 3 and 4, B. J. Bowyer (Totnes). Single Tailed Goldfish: 1 and 3, R. King (Torbay); 2, T. Hampshire (Yate & District); 4, R. Bishop (Yate & District). Shubunkins: 1, 2, 3 and 4, R. King (Torbay). Twin Tailed Goldfish: 1, 2 and 3, R. King (Torbay); 4, Mrs. R. Matthews (Torbay). A.O.S. Goldfish: 1, Mr. Woodbury (Exeter); 2 and 3, R. King (Torbay); 4, T. S. Cox, H. L. Mirror Cypri, Tench, Oris and Rudd; 1 and 2, R. H. Howard (Totnes); 3, W. Woodbury (Exeter). Breeders (Tropical Egg-layers): 1 and 4, J. P. Slaney (Totnes); 2, A. E. S. Kirby (Plymouth); 3, W. L. Rundle (Plymouth). Breeders (Livebearers): 1, W. G. Corrick (Taunton & District); 2, F. Osman (Torbay); 3, Mrs. V. King (Torbay); 4, Mrs. P. Brown. Breeders Coldwater: 1, 2, 3 and 4, R. King (Torbay). Tropical Marine: 1 and 2, A. Carr (B.M.A.A.); 3 and 4, H. L. Doubleday (B.M.A.A.). Native Marine: 1, H. L. Doubleday (B.M.A.A.); 2, T. L. Woolley (Torbay); 3 and 4, Master D. Parham (Torbay).

THE Rhondda A.S. third Open Show attracted 327 entries and the quality of the fish benched was very high. The results were as follows: Furnished Aquaria: 1 and 4, N. Rowlands; 2, D. Jones (R.A.S.); 3, Ross and Susan (R.A.S.). Bb: 1, J. Edwards (R.A.S.); 2, R. Hoare (Cardiff); 3, D. H. Thomas (R.A.S.); 4, D. Jones (R.A.S.). Bb: 1 and 3, A. Young; 2, R. Young; 4, D. Warman (Cardiff). Ca: 1 and 3, R. Hoare (Cardiff); 2, C. Turner; 4, J. Biles. Cb: 1, R. Hoare (Cardiff); 2, W. Rice; 3, C. Box; 4, T. Pass (R.A.S.). A.O.S. Cichlids: 1, P. Player (Cardiff); 2, D. Richards (R.A.S.); 3, M. Bishop; 4, R. Dava. A.V. Angel: 1, P. Bess; 2, T. Davies (R.A.S.); 3, J. Edwards (R.A.S.); 4, N. Rowlands. Db: 1, R. Hoare (Cardiff); 2, W. Rice; 3, A. Young; 4, P. Player (Cardiff). Beta Splendens: 1, W. Limbrick; 2, J. Cilia (Penarth); 3, P. Sargent (R.A.S.); 4, Ross and Susan (R.A.S.). Eb: F. Hibbert (R.A.S.); Mr. and Mrs. M. Williams (R.A.S.); 3, A. Ibbertson; 4, Mr. and Mrs. M. Williams (R.A.S.). Egg-laying Tooth-carp: 1, M. Addicott; 2, 3 and 4, G. Churchill (Bristol). Gf: 1, R. Hoare (Cardiff); 2, P. Player (Cardiff); 3, B. Cox; 4, K. Williams (Junior R.A.S.). Corydoras and Brochis: 1, Mr. and Mrs. M. Williams (R.A.S.); 2, Mrs. R. Hurn (R.A.S.); 3, C. Pass (R.A.S.); 4, A. Young; 1, R. Stallard (R.A.S.); 2, K. Williams (R.A.S.); 3, Miss C. Pass (R.A.S.); Miss D. Player (Cardiff). Hb: 1, 2 and 3, R. Hoare (Cardiff); 4, T. Davies (R.A.S.). A.O.S. Egg-layer: 1, R. Hoare (Cardiff); 2 and 3, P. Player (Cardiff); 4, D. Harding (Bishops Cleeve). N: 1, R. Hoare (Cardiff); 2, 3 and 4, Mr. and Mrs. M. Williams (R.A.S.). A.V. Guppy (Male): 1 and 4, C. Box; 2, J. Thomson; 3, J. Cilia (Penarth). A.V. Guppy (Female): 1, J. Thomson; 2 and 3, P. Player (Cardiff); 4, D. Harding (Bishops Cleeve). A.V. Swordtail: 1, C. Pass (R.A.S.); 2, Mr. and Mrs. Williams (R.A.S.); 3, C. Turner; 4, T. Pass (R.A.S.). A.V. Platies: 1 and 2, W. Rice; 3, J. Egan; 4, R. Perkins. A.V. Molly: 1, C. Pass (R.A.S.); 2, J. Thomson; 3, Mrs. R. Hurn (R.A.S.); 4, M. Bishop. Na: 1 and 4, P. Player (Cardiff); 2, A. Ibbertson; 3, J. and G. Pick (R.A.S.). Nb: 1, D. H. Thomas (R.A.S.); 2 and 4, A. Ibbertson; 3, D. Warman (Cardiff). U: 1, 2 and 3, B. Harding; 4, A. Player. V: 1, B. Harding (Cardiff); 2 and 3, C. Rupert (Port Talbot). A.O.S. Coldwater: 1, A. Player (Cardiff); 2, 3 and 4, C. Rupert (Port Talbot). Alpha: 1, D. Jones (R.A.S.); 2, Mr. and Mrs.

Williams (R.A.S.); 3, M. Addicott. Best Fish in Show: P. Player (third year in succession). Most Points in Show: R. J. Hoare (Allcomers). Most Points in Show: Mr. and Mrs. Williams (Rhondda). Due to the retirement of Mr. D. Jones, another popular member of the Club has been chosen as Treasurer for the coming year Mr. Ross Morgan. The Committee extends their thanks to Mr. D. Jones for a job well done, and wishes the new Treasurer the best of luck and every success in his post.

AT the two monthly meetings held by **Grimaby and Cleethorpes A.S.**, in September, the president of the Society's answered members questions and Mr. L. Shearson gave a talk on foods, and their value. Table Show Results: Small Characins: 1, R. Jennings; 2, L. Dearden; 3, C. Easton. Molly (Female): 1, T. Walker; 2 and 3, L. Dearden. A.O.V. (Egg-layer): 1, L. Dearden; 2, G. Lill.

THE **Merseyside A.S.** recently welcomed as the Guest Speaker, Mr. Ray Huey of the British Killifish Association. Mr. Huey not only gave an excellent talk on the selection, keeping and breeding of Killifish but brought such enthusiasm to his subject that several members were more than eager to bid for the fish and killi eggs which Mr. Huey offered for Auction at the end of his talk. A fascinating introduction to the Top and Swish Spawners, Bottom Spawners and Peat Divers was supported by an excellent selection of slides and Mr. Huey had also brought some beautiful species of fish for all to see. One fish in particular—a member of the *Rohlfii* family—was a feast for any aquarist's eyes, displaying beautiful colouring comparable with even the most exotic of marine species.

THE **Portsmouth A.S.** Open Show results were as follows: Inter-club Furnished Aquaria Tropical: 1, Havant; 2, Southampton; 3, Portsmouth. Inter-club Furnished Aquaria Coldwater: 1, Portsmouth; 2, Carisius Club; 3, Havant. Individual Furnished Aquaria Tropical: 1, A. W. Atkinson, Portsmouth; 2, L. A. Howard, Portsmouth; 3, D. Haines, Gosport; 4, Individual Furnished Aquaria Coldwater: 1, A. W. Atkinson, Portsmouth; 2, J. Lamboll, Portsmouth; 3, Miss W. Ryder, Portsmouth. Individual Furnished Aquaria Marine: 1, V. Tunstall; 2, J. Howard, Portsmouth; 3, A. W. Atkinson, Portsmouth. Junior Individual Furnished Aquaria Tropical: 1, A. Grimsell, Havant; 2, I. Davis, Havant; 3, C. Donnelly, Portsmouth. Junior Individual Furnished Aquaria Coldwater: 1, S. Armitage, Havant; 2, C. Donnelly, Portsmouth; Barbs: D. W. Armour, Riverside; 2, D. V. Jones, Southampton; 3, N. Davis, Havant. Ca: 1, C. Beets, Havant; 2, L. Penn, Portsmouth; 3, K. Johnson, Portsmouth. A.V. Characin: 1, H. Armitage, Havant; 2, P. Sparshatt, Havant; 3, N. T. Fisher, A.V. Angel: 1, D. Haines, Gosport; 2, Mrs. Stillwell, Portsmouth; 3, K. Johnson, Portsmouth. Apist., Pel. and Nann.: 1, M. Strange, Basingstoke; 2, A. Denton, Portsmouth; 3, K. Johnson, Portsmouth. A.O.S. Cichlid: Mrs. I. Strange, Basingstoke; 2, M. Strange; 3, A. Furnedger, Portsmouth. Beta Splendens: 1, R. C. Peck, Basingstoke; 2, M. Strange; 3, P. Sparshatt, Havant. A.O.S. Labyrinth: 1, G. Greenhalf, Kingston; 2, Mrs. I. Strange; 3, Mrs. Stillwell. A.A.V.: Egg-laying Tooth-carp: 1, D. V. Jones, Southampton; 2 and 3, H. Armitage, A.O.S. Trop. Catfish: 1, D. King, Kingston; 2, G. Greenhalf; 3, E. Binstead, Portsmouth. A.V. Corydoras and Brochis: 1, G. Greenhalf; 2, T. Blanchard, Salisbury; 3, D. V. Jones, A.V. Rabbits: 1, D. Haines; 2, F. Willis, Portsmouth; 3, G. Greenhalf. A.V. Danio and W.C.M.M.: 1, G. Greenhalf; 2, D. V. Jones; 3, L. Penn, Portsmouth. A.V. Loach: 1, H. Armitage; 2, D. W. Armour; 3, K. Clough, Gosport; A.O.S. Egg-layer: 1, G. Greenhalf; 2, D. King; 3, P. Sparshatt,

Havant. A.V. Guppy (male): 1 and 2, M. Mansbridge, Southampton; 3, V. Tunstall. A.V. Guppy (female): 1, C. Beets, Havant; 2, K. Johnson, Portsmouth; 3, C. Beets. A.V. Swordtail: 1, G. Greenhalf; 2, T. Blanchard; 3, K. Clough. A.V. Platy: 1, L. Penn; 2 and 3, A. J. Mepham, Brighton. A.V. Molly: 1, R. C. Peck; 2, V. Tunstall; 3, T. Blanchard. A.O.S. Livebearer: 1 and 2, M. Mansbridge; 3, G. Greenhalf. Class Va: 1, Miss Ryder, Portsmouth; 2, E. Binstead, Portsmouth; 3, J. Lamboll, Portsmouth. Class Vb: 1, R. Dudley, Spas; 2 and 3, P. Leach, G.S.G.B.; Class Vc: 1 and 2, R. Leach, G.S.G.B.; 3, R. Dudley, Class Ud: 1, Miss Ryder, Portsmouth. Class Vd: 1, J. Leach, G.S.G.B.; 2, R. Dudley, Class Ve: 1, J. Lamboll, Class Vv: 1, A. W. Atkinson, Portsmouth. Class W, a/c: 1, R. Dudley; 2, J. Lamboll. Class W, a/d: 1, Mrs. Stillwell; 2 and 3, W. J. Ryder; A.V. Centrarchid: 1, Mrs. Stillwell; 2, D. Stokes, Portsmouth; 3, J. Lamboll. A.O.S. Coldwater: 1, J. Lamboll; 2, W. J. Ryder; 3, T. Blanchard. Class X.b.m.: 1, R. M. Smithers, Brighton; 2, D. V. Jones; 3, D. Haines. Class X.c.t.: 1, G. Greenhalf, Gosport. X.O.P.: 1, Mrs. Lamboll, Portsmouth; 2 and 3, C. Beets, XU.W.: 1, J. Lamboll. Class 2a: 1, V. Hunt, Portsmouth; 2, G. Greenhalf; 3, R. M. Smithers. Class 2b: 1 and 3, Mrs. Stillwell; 2, V. Hunt, Class 2c: 1, D. Haines; 2, T. Blanchard; 3, G. Greenhalf. Taylor Trophy for highest total points: Tropical: G. Greenhalf, Kingston. Taylor Trophy for highest total points: Coldwater: J. Lamboll, Portsmouth.

RESULTS of the **Edmonton Section of the Fancy Guppy Association**, Annual Open Show were as follows:

Male: Delta: 1, T. Tiffany; 2, L. Goff; 3, M. Delingpole. Fantail: 1, D. Becham; 2, M. Delingpole. Original Veil: 1, S. Croft. Long Dorsal Veil: 1 and 2, A. R. Fish; 3, T. Tiffany. Short Dorsal Veil: 1, 2 and 3, A. R. Fish. Dorsal Veil: 1, 2 and 3, G. Steadman. Cofers: 1, K. Lee. Lyreveil: 1, M. Delingpole. Top Sword: 1 and 2, R. Harper. Bottom Sword: 1, M. Delingpole. Double Sword: 1, Ken Lee. Colour: 1, Don and Babs Phillimore; 2, T. Tiffany; 3, D. Curry. Junior Male: 1, Master P. Harper. Ladies' Male: 1, Mrs. D. Barker. Female Classes: Soperba: 1 and 3, A. R. Fish; 2, K. Lee. Scallop: 1, M. Browning; 2, D. Barker. Wedgetail: 1, M. Jones, Metropolitan; 1, A. R. Fish; 2 and 3, K. Lee. Roundtail: 1, S. Croft. Cofers: 1, S. Croft; 2 and 3, M. Delingpole. Colour: 1, T. Tiffany; 2, M. Jones. Natural: 1, K. Lee; 2, I. Smith; 3, S. Croft. Junior: 1, Master P. Harper. Ladies: 1, Mrs. D. Barker. Breeders' Classes: Males: 1, Don and Babs Phillimore; 2, D. Curry; 3, M. Delingpole. Females: 1, K. Lee; 2, M. Delingpole; 3, Don and Babs Phillimore. Matched Pairs: 1, D. Curry. Master: 1, Don and Babs Phillimore; 2, S. Croft. Advanced Master: 1, Don and Babs Phillimore; 2, Mrs. J. Croft. Experimental Males: Don and Babs Phillimore. Major Awards: Best Fish in Show: K. Lee. Aquarist Pin: K. Lee. Best Female: K. Lee. Best Male: T. Tiffany. Best Breeders: Don and Babs Phillimore. Ketch Barsclough Trophy: Don and Babs Phillimore. The number of entries was 170 totalling 296 guppies in all. Further details of the Edmonton Section which meets on the first Sunday in every month at the Four Hills Hall, Brigadier Hill, Enfield, can be obtained from the Section.

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Secretary Mr. D. Phillimore, 103 Wilbury Way, Edmonston, London, N.16 1BX. Tel: 01-863 3012.

THE Open Show results for **Bracknell A.S.** were as follows: AK: 1, T. Duffey (Bracknell); 2, B. Bosson (Basingstoke); 3, M. Carter (Bracknell); 4, Mrs. J. Twine (Walthamstow). B: 1, 2 and 3, C. Pike (High Wycombe); 4, Mr. Funnell (Uxbridge). C: 1, G. Greenhalf (Kingston); 2, D. Jones (Southampton); 3, Mrs. J. Twine (Walthamstow); 4, B. Jones (Basingstoke). C.A.: 1, Mr. Kingsley (Independent); 2, Mr. Cruickshank (Borehamwood); 3, Mrs. O. Lesley (High Wycombe); 4, Mrs. J. Garrad (Runcyngede). D: 1, H. Meers (Basingstoke); 2, D. Haines (Gosport); 3, M. Davies (Reading); 4, Mrs. M. Nethersell (Riverside). D.A.: 1, L. Jordan (Bracknell); 2, J. Healey (Ealing); 3, J. Batts (Ealing); 4, M. Chapman (Basingstoke). D.B.: 1, L. Jordan (Bracknell); 2, J. Batts (Ealing); 3, H. Bowes (Independent); 4, R. Wright (East Dulwich). E: 1, G. Greenhalf (Kingston) and Best Fish in the Show; 2, Mrs. P. Sawford (Kingston); 3, D. King (Kingston); 4, J. Hughes (Rochampton). E.A.: 1, D. Reilly (Anson); 2, S. Applin (Independent); 3, L. Garrad (Runcyngede); 4, R. Bowes (Independent). F: 1, M. Collins (Hounslow); 2, Brooks (Hounslow); 3, 4, R. Armstrong (Bracknell). G: 1, 4, G. Greenhalf (Kingston); 2, L. Bessler (Anson); 3, K. Clough (Gosport). H: 1, 3, R. Wright (East Dulwich); 2, T. Duffey (Bracknell); 4, Mrs. M. Nethersell (Riverside). I: 1, Mrs. G. Carter (Bracknell); 2, P. Newman (High Wycombe); 3, C. Pike (High Wycombe); 4, K. Barrett (Kingston). K: 1, Mrs. G. Carter (Bracknell); 2, A. Wood (Anson); 3, J. Taylor (Independent); 4, Mr. Funnell (Uxbridge). L: 1, M. Gough (Basingstoke); 2, M. Carter (Bracknell); 3, Mrs. P. Lambourne (Rochampton); 4, A. Wood (Anson). M: 1, R. Isley (Basingstoke); 2, J. Meers (Basingstoke); 3, T. Berryman (Bracknell); 4, Mr. Kingsley (Independent). N.B.M.: 1, R. Leslie (High Wycombe); 2, Mrs. Hudson (Rochampton); 3, A. Blake (Basingstoke); 4, R. Wright (East Dulwich). N.O.T.: 1, D. King (Kingston); 2, H. Watts (Hendon); 3, A. Marshall (Basingstoke); 4, G. Warwick (Bracknell). O: 1, M. Nethersell (Riverside); 2, R. Bowes (Independent); 3, Mrs. Sawford (Kingston); 4, D. Reilly (Anson). P: 1, M. Goss (Riverside); 2, Mrs. A. Lefevre (Kingston); 3, D. King (Kingston); 4, J. Batts (Ealing). Q: 1, Mr. and Mrs. T. LeGuiret (Rochampton); 2 and 3, J. Healey (Ealing); 4, R. Bowes (Independent). R: 1, A. Blake (Basingstoke); 2, Mrs. D. Cruickshank (Kingston); 3, K. Owenell (East Dulwich); 4, R. Leslie (High Wycombe). S: 1, Mr. Funnell (Uxbridge); 2, D. Reilly (Anson); 3, J. Batts (Bracknell); 4, Mrs. M. Nethersell (Riverside). T: 1, Mr. Mansbridge (Southampton); 2, A. Blake (Basingstoke); 3, J. Dixon (Bracknell); 4, Mrs. D. Cruickshank (Kingston). U2 & D: 1, 2 and 3, D. Arkell (Bracknell); 4, Mrs. Pinder. Ub, c: 1, 2, 3, D. Paul; 4, A. Wood (Anson). V: 1, 2, 3, D. Paul; 3, D. Arkell (Bracknell). W: 1, 4, V. Hunt (Havant); 2, T. Twine (Walthamstow); 3, Mrs. M. Arkell (Bracknell). W.A.: 1, 2, and 3, L. Menhennet (New Forest). W.B.: 1, 4, E. Binns (Portsmouth); 2, Mrs. O. Leslie (High Wycombe); 3, A. Marshall (Basingstoke). X.B.N.: 1, D. Jones (Southampton); 2, Mrs. Newman (Uxbridge); 3, P. Stevens (Bracknell); 4, R. Armstrong (Bracknell). X.O.T.: 1, Mrs. D. Barrett (Kingston); 2, P. Gieger (Uxbridge); 3, H. Watts (Hendon); 4, Mrs. D. Cruickshank

(Kingston). Z.A.C.: 1, H. Watts (Hendon); 2 and 4, T. Duffey (Bracknell); 3, Mrs. Newman (Uxbridge).

NEWS from **Vauxhall Motors A.S.** mentions that the annual general meeting of E.M.A.A.S. coincided with the company's annual closure and A. Philip was the sole committee member available to represent the society. Nevertheless he was able to stage several entries and secured a first prize, one second and was placed fourth overall in the various classes held in conjunction with this meeting. The Herts Horticultural Society held its annual show in St. Albans early in September and several of the members competed in the classes for tropical and cold-water fish, which are a feature of this show. J. Baines won two first prizes, a second and a third. The four entries secured three trophies. In the class for furnished aquaria staged by clubs, B. Carter and G. Bryant won first prizes. Two of the apprentices made their debut in this class and M. Hawkes and V. Sinfield are to be congratulated on winning third place. D. Brunton won two trophies with his side entry, J. McCabe was fourth in the class for Barbs and A. Philip won two seconds and a third showing cichlids, labyrinths and loaches.

AT the **Hford and District Aquarist & Pondkeepers' Society** September meeting, the evening's function was an auction where many varieties of fish, plants and anything within the hobby were bought and sold by members attending. The monthly Table Show for this meeting was A.V. Guppy, and A.V. Twinstar Pondfish in the coldwater section. R. Rowe took all honours in this show. Visitors are always welcome to attend and anyone interested in obtaining more information should contact the secretary, Ron Rich, 103 Heath Road, Chadwell Heath, Romford, Essex.

THE progress of the internal competitions at **Ealing and District A.S. (P.B.A.S.)** has now reached the three-quarter stage and the clear leaders are emerging. J. Batts seems to be irrevocable in the Ankin Trophy (total Table Show points) and he is out in front too in the Plant competition, the Mills Trophy. In the K.O. Cup the two finalists will be J. Irvine and K. Wakeford. Forthcoming attractions at the Club include a talk on Plants, Adrian Blake's views on his favourite fish and a talk on Angels. Participation events include a trip to the B.A.P. at Manchester and a social evening. New members are always welcome at the meetings each first and third Tuesday of each month at The Northfields Community Centre, Northcroft Road, W.13, at 8 p.m.

HERE is some further news from the **Border A.S.** Recently the members heard a very interesting talk by Mr. Smout of Kendal and this was followed by a quiz, and a talk by D. James from Morecambe. The next few weeks will include film shows and talks by Mr. Robertson of Tynemouth, Mr. Martin of Whitehaven and Mr. Jones of Morecambe. Several members competed at the Whitehaven open show and were successful in many classes. The club meets fortnightly in the Morton Community Centre, Carlisle, and the meetings commence at 8 p.m. Anyone interested in fish-keeping will be very welcome.

THE **Havant and District A.S.'s** first attempt in presenting an open show was an outstanding success, there being 420 entries. The show was well attended and the best fish in the show went to R. Isley of Basingstoke. The P.B.A.S. Championship Trophy for Twin-

tailed Goldfish was won by D. Stokes of Havant and District A.S. The rest of the results were as follows: Furnished Tank Individual Tropical: 1, Mrs. J. Howard (Portsmouth); 2, D. Booker (Havant); 3, J. Howard (Portsmouth). Furnished Tank Individual Coldwater: 1, A. W. Atkinson (Portsmouth); 2, J. Howard (Portsmouth); 3, Miss Kim Armitage (Unattached). Barbs: 1 and 3, R. Browning (Brighton); 2, H. Armitage (Havant); 4, A. Blake (Basingstoke). Hyphessobrycon, Hemigrammus and Cheirodon: 1, C. Bees (Havant); 2, J. Dickinson (Havant); 3, L. Penn (Portsmouth); 4, Mrs. J. Vincent (Southampton). A.O.S. Characin: 1, N. Fisher (Havant); 2 and 4, P. Spearhat (Havant); 3, N. Franklin (Havant). Apistogramma, Pelmatochromis and Nannacara: 1, A. Blake (Basingstoke); 2, C. Atwood (Brighton); 3, R. Isley (Basingstoke); 4, A. Bridger (Havant). A.O.S. Cichlid: 1, D. Haines (Gosport); 2, N. Davis (Havant); 3, A. Ford (Havant); 4, T. Hampshire (Bristol). Siamese Fighters: 1 and 2, T. Hampshire (Bristol); 3, S. Webster (Havant); 4, V. Tunstall (Unattached). A.O.S. Labyrinth: 1, A. Blake (Basingstoke); 2, J. Hughes (Rochampton); 3, K. Clough (Gosport); 4, P. Hayward (Gosport). Egg-laying Toothcarps: 1, H. Armitage (Havant); 2, P. Brown (Southampton); 3, D. Haines (Gosport); 4, D. Jones (Southampton). A.O.S. Tropical Catfish: 1, K. Clough (Gosport); 2, H. Armitage (Havant); 3, Mrs. S. Corbin (Midsussex); 4, Mr. and Mrs. Le Guiret (Rochampton). Corydoras and Brochis Catfish: 1, Miss Fiona Etheridge (Gosport); 2, D. Jones (Southampton); 3, E. Greenfield (Havant); 4, R. Isley (Basingstoke). Rasboras: 1, A. Blake (Basingstoke); 2 and 4, R. Bennett (Bristol); 3, K. Clough (Gosport). Danios and Minnows: 1, L. Penn (Portsmouth); 2, P. Sparshatt (Havant); 3, H. Armitage (Havant); 4, B. Coombes (Bournemouth). Loaches: 1, H. Armitage (Havant); 2, S. Webster (Gosport); 3 and 4, D. Booker (Havant). A.O.S. Tropical Egg-layer: 1, R. Isley (Basingstoke); 2, P. Sparshatt (Havant); 3, Kevin Davis (Havant); 4, J. Hughes (Rochampton). Guppy (Male): 1, J. Lane (Amesbury); 2, D. Soper (Midsussex); 3 and 4, M. Mansbridge (Southampton). Guppy (Female): 1, Mr. and Mrs. J. Lamboll (Portsmouth); 2 and 4, D. Soper (Midsussex); 3, J. Lane (Amesbury). Swordtails: 1, Mr. and Mrs. Le Guiret (Rochampton); 2, 3 and 4, R. Hemmings (Unattached). Platys: 1, A. Blake (Basingstoke); 2, B. Coombes (Bournemouth); 3, L. Penn (Portsmouth); 4, D. Jones (Southampton). Mollys: 1, Mrs. Bennett (Bristol); 2, J. Lane (Amesbury); 3, H. Gilbert (Southampton); 4, R. Hemmings (Unattached). A.O.S. Livebearer: 1, 3 and 4, M. Mansbridge (Southampton); 2, D. Jones (Southampton). Goldfish and London Shubunkins: 1, E. Binns (Portsmouth); 2, T. Hampshire (Bristol); 3, L. Menhennet (New Forest); 4, N. Collins (Yeovil). Singedails and Guppies: 1 and 3, C. Bees (Havant); 2, D. Lettis (G.S.G.B.); 4, K. Johnson (Havant). Twinstar Goldfish: 1, D. Stokes (Havant); 2 and 4, D. Smalley (G.S.G.B.); 3, K. Johnson (Havant). Sunfish: 1, V. Voysey (Salisbury); 2, D. Stokes (Havant); 3, J. Hughes (Rochampton); 4, E. Binns (Portsmouth). A.O.S. Coldwater: 1, V. Collins (Yeovil); 2 and 3, V. Hunt (Havant); 4, Mr. and Mrs. J. Lamboll (Portsmouth). Breeders (Tropical Egg-layer): 1, P. Stevens (Bracknell); 2, R. Smithers (Brighton); 3, D. Jones (Southampton); 4, J. Hughes (Rochampton). Breeders (Tropical Livebearer): 1, A. Blake (Basingstoke); 2, C. Bees (Havant); 3, M. Mansbridge (Southampton); 4, R. Isley (Basingstoke). Plants: 1, V. Collins (Yeovil).

ON Tuesday, 16th November, the **Aberdeen A.S.** will hold its monthly meeting in the Y.M.C.A. Rooms, commencing at 7.30 p.m. Mr. C. Cox, of Aberdeen, will give an illustrated talk on "Aquarium Plants." Confining the horticultural theme, there will be a special class in the Table Show for any variety of single plant (no gravel). The two other classes of the evening are to be: (1) Pair Egg-layers; (2) Pair Swordtails. The evening will also consist of the usual entertainments.

PREVENTS
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AT the September meeting of the **Harrogate and District A.S.**, the main event of the evening were talks given by two committee members. The first was given by Mr. Pendleton on **Malayan Fishkeeping Experiences** and the second talk by Peter Stohard, was on **Breeding Labyrinths**. The **Table Show** was for **Sharks and Foxes**, and an A.O.V. class, the results being as follows: **Sharks and Foxes**: 1, B. Slater; 2, M. Levitt; 3, D. Taylor. A.O.V.: 1, M. Levitt (also Best in Show); 2, Mrs. W. Atkinson; 3, D. Peggall.

The chief item at the October meeting will be a discussion about the trip to the B.A.P. at Belle Vue. The meetings are held every second Tuesday of the month, and commence at 7.45 p.m. at the Conservative Rooms, 15 Park View, Harrogate.

AT the September meeting of the South Western Group of the **B.M.A.A.**, a communication was received via the parent group which said that a member in Malta, Denis Sanderson, was willing to send Mediterranean fish to fellow members at freight cost. A small slide show by the secretary, showing some species of Mediterranean fish gave the members present some idea of the many attractive fish available. The group is very proud of its achievements at the Torbay Open Show. There were 47 entries in the Marine Class, and with the exception of one card, the B.M.A.A. cleared the board. The results were as follows: **Tropical Marine Tank**: 1 and 2, A. Carr; 3 and 4, L. Doubleday. **Native Marines**: 1, L. Doubleday; 3 and 4, D. Parham. Mr. Doubleday also won the F.B.A.S. Marine Trophy.

THERE will be a meeting of the **British Koi Keepers' Society** in the Rhododendron Room, Royal Horticultural Society, New Hall, from 2.30 p.m. - 4.30 p.m., Sunday, 31st October. This meeting will be of an entirely informal nature and all those interested in the keeping and breeding of Koi are welcome.

THE **Mid-Kent A.S.** held a mini-tank competition recently which was judged by B. Clare. First prize for a very fine set-up going to B. George. Mr. George was again in among the prizes when the club entered the **Sittingbourne inter-club show** on Friday, 24th September, taking a first in the Barb class. Mr. George and T. Pharo have recently been appointed to the committee. The **Mid-Kent A.S.** has a mixture of experienced and novice members and any person wishing to attend meetings or to become a member will be made very welcome at St. Phillips Community Centre, Kingsley Road, Maidstone, any first or third Thursday of each month. Any information required re club membership or activities can be obtained by ringing Maidstone 26259 or Maidstone 65913.

A **LECTURE** was given to the **Telford A.S.** on all-glass aquariums, by D. Coxon. Over one hundred entries were received at the annual show and a film show was given on marines while judging was taking place. Results: **Livebearers**: 1, B. Jefferies; 2, B. Evans; 3, L. S. Sanders. **Barbs**: 1 and 2, R. Rowley; 3, C. L. Sanders. **Cichlids**: 1, D. Coxon; 2, W. G. Jones; 3, R. Rowley. **Characins**: 1 and 2, W. G. Jones; 3, C. L. Sanders. **Anabantids**: 1, R. Rowley; 2 and 3, D. Goddard. **Corydoras**: 1, P. Hughes; 2, M. Thorneycroft; 3, C. L. Sanders. A.O.V. **Cats**: 1, M. Thorneycroft; 2, W. G. Jones; 3, R. Anthony. **Danios, Rasboras and White Cloud Mountain Minnow**: 1, C. L. Sanders; 2, B. Harris; 3, L. S. Sanders. **Pairs (Egg Layers)**: 1, R. Rowley; 2, D. Coxon; 3, B. Jefferies. A.O.V.: 1, D. Coxon; 2, C.

Harper; 3, R. Rowley. **Plants**: 1, B. Hughes; 2, W. G. Jones; 3, L. S. Sanders. **Furnished Aquariums**: 1, D. Coxon; 2, Mrs. B. Hughes; 3, R. Anthony. **Best Fish in Show**: R. Rowley (Tinfoil Barb).

THE **Trowbridge and District A. & P.S.** regret to announce the complete resignation of Chris Penny from all club and aquarist matters. He, a well-known figure in the aquarist world, was until recently show secretary, but because of increasing demands upon his leisure hours found it necessary to relinquish this post; further outside commitments now require his full time and attention. The club chairman reluctantly accepting the resignation, thanked Mr. Penny on behalf of all member for his unstinting and selfless way in which he had always given of his time and energies to all aspects of club activities, and regretted the loss of such a stalwart and popular member of the Society.

THE new officers for **South Leeds A.S.** for the current year are as follows: chairman, J. Sanderson; vice-chairman, J. M. Pearson; secretary, T. Holdsworth, 50 Abbot View, Armley, Leeds, 12; treasurer, R. Lovell; show secretary, Miss A. Jackson; P.R.O., F. S. Cummings. Venue: Cockburn High School, Burton Road, first and third Wednesdays each month.

SEPTEMBER proved a busy month for **New Forest A.S.** First, there was the second leg of a three-way competition between Bournemouth, Salisbury and New Forest. The classes shown being: Barbs; Danios, Rasboras and White Cloud Mountain Minnow; Characins. From this New Forest could only muster five points, to Salisbury's twelve and Bournemouth's thirteen, leaving quite a number to make up in the final leg at Bournemouth. The quiz however, resulted in a win for the N.P.A.S. team of C. Knapp, S. Bray, D. Harding and A. Williamson over Bournemouth by 58 points to 57.

The monthly club Table Show of Swordtails and Common Goldfish was ably judged by D. Lane and B. Higginson and the results were: **Swords**: 1, 3 and 4, D. Harding; 2, M. Knowles. **Common Goldfish**: 1, D. Harding; 2, 3 and 4, L. Menhennet. New members can be assured of a warm welcome and are requested to come along on the third Monday of the month to Lymington Community Centre.

THERE were over 700 entries at the third Open Show of the **Lincoln and District A.S.** The results were as follows: **Guppies**: Mr. Jones (Grantham); 2, B. Whitelam (Dukeries); 3, Mr. Holmes (Derby Regent). **Swordtails**: 1, Mr. Dearden (Grimsby); 2, Mr. Hopewell (Workshop); 3, Mr. Whitelam (Scunthorpe). **Mollies**: 1, Mr. Allsopp (Alfreton); 2, Mr. Whitelam (Scunthorpe); 3, Mr. Ellis (Swillington). **Platies**: 1, 2 and 3, Mr. Allsopp (Alfreton). **Small Barbs**: 1, J. Stella (Sheffield); 2, Mr. and Mrs. Jernson (Grimsby Cautoids); 3, Mr. and Mrs. P. Jenson (Grimsby Cautoids). **Large Barbs**: 1, E. Smith, Jr. (Sheffield); 2, Mr. Sewell (Sherwood); 3, Mr. and Mrs. Cohen (Castleford). **Small Characins**: 1, Ian Lyall (Skegness); 2, M. Allsopp (Alfreton); 3, I. R. Hepinstall (Castleford). **Large Characins**: 1, G. Thickbroom (Castleford); 2, Mr. Chapman (Gainsborough); 3, J. A. Duffin (Boston). **Killifish**: 1, A. Curchin (Swillington); 2, J. R. Hoddes (Scunthorpe); 3, D. Parnell (Creswell). **Minnows and Danios**: 1, E. Smith (Sheffield); 2, Mr. Sewell (Sherwood); 3, J. R. Hoadler (Scunthorpe). **Sharks and Foxes**: 1, J. Searle (Selby); 2, C. Jewison (Thorne); 3, Mr. and Mrs. Cohen (Castleford). **Rasboras**: 1 and 2,

E. P. Stanton (Sheffield); 3, Mr. Hislop (Swillington). **Dwarf Cichlids**: 1, H. Kuhn (Lincoln); 2, I. R. Hepinstall (Castleford); 3, P. Reynolds (Dukeries). **Large Cichlids**: 1, H. Bunnage (Lincoln); 2, A. Stiff (Lincoln); 3, S. and A. Thomas (Castleford). **Angels**: 1, Mrs. M. Igoe (Sherwood); 2 and 3, Mr. Sewell (Sherwood). **Catfish**: 1, C. W. Marsden (Workshop); 2, I. R. Hepinstall (Castleford); 3, Mr. Shirley (Selby). **Loaches**: 1, Mr. West (Sherwood); 2, Mr. Sewell (Sherwood); 3, I. R. Hepinstall (Castleford). **Fighters**: 1, R. Hoddes (Scunthorpe); 2 and 3, Mr. and Mrs. Cohen (Castleford). A.O.V. **Anabantids**: 1, N. Jackson (Workshop); 2, J. Searle (Selby); 3, C. Easton (Grimsby and Cleethorpes). A.O.V. **Tropical**: 1, Mr. and Mrs. Hall (Nuneaton); 2, Mrs. L. McGrath (Scunthorpe); 3, C. W. Marsden (Workshop). **Pairs Egglayers**: 1, Mr. Carr (Doncaster); 2, Mr. and Mrs. Cohen (Castleford); 3, B. Downing (Sherwood). **Pairs (Livebearers)**: 1, Mr. and Mrs. Cohen (Castleford); 2, A. E. Heap (Blakeborough); 3, Mr. and Mrs. Hall (Nuneaton). **Junior Egglayers**: 1, M. Buxton (Sheffield); 2, W. Moody (Boston); 3, P. Reynolds (Dukeries). **Junior Livebearers**: 1, A. Bull (Derby Regent); 2, G. Thickbroom (Castleford); 3, S. Cade (Lincoln). **Goldfish and Comets**: 1, G. Thickbroom (Castleford); 2, A. Harkiss (Scunthorpe); 3, Mr. and Mrs. Toyne (Sheffield). **Shubunkin and Fancy Goldfish**: 1, C. Asquith (Castleford); 2 and 3, Mr. and Mrs. Deakin (Nuneaton). A.O.V. **Coldwater**: 1, P. Booth (York); 2 and 3, Mr. and Mrs. Higginbottom (Sheffield). **breeders (Egg-layers)**: 1 and 3, Mr. Sewell (Sherwood); 2, Mr. and Mrs. Cohen (Castleford). **Breeders (Livebearers)**: 1, H. Kuhn (Lincoln); 2, J. Igoe (Sherwood); 3, L. Evans (Grimsby).

NEW SOCIETIES

A new society, the **Dorchester and District A.S.**, has been formed recently and will be meeting on the second Thursday in each month at Darners Road Junior School, Dorchester, Dorset. Officials are Hon. Chairman: Mr. H. W. Coenick; Hon. Secretary/Treasurer: Mrs. B. L. Jefferies, 35 Westbury Way, Dorchester. Committee: Mr. M. H. Cleall, P. J. Jefferies, N. C. Matthews, A. Membury.

A **Tropical Fish Club**, under the name of **Dunmow and District A.S.** has been formed recently and at present there are sixteen members. The meetings are held fortnightly at the White Hart Hotel, Dunmow.

The monthly meetings will cover "Table Shows," "Quizzes," and general discussions, and it is hoped shortly to form a "Discus Club," to enable members to compare different methods of keeping and breeding Discus.

CHANGE OF VENUE

Rushden Fishkeepers Association now meet at Horrell's Social Club, Fitzwilliam Street, Rushden. Entrance opposite the British Legion Hall. Meetings are held at 8 p.m. on the third Wednesday of each month. Hon. Sec.: C. M. Evans, 81 Trafford Road, Rushden, Northants, NN10 0JP.

The **Exeter and District A.S.** now meets at The Senior Citizens Centre, Cowick Street, Exeter. Meetings are held every other Friday at 8 p.m. Visitors and new members welcome. List of activities and other information available from the Secretary, Mr. W. F. Biv, 14 Beaworthy Close, Exeter, EX2 9LB.

SECRETARY CHANGES

Castleford and District A.S.: J. B. Stevens, 72 Falcon Drive, Love Lane, Castleford, Yorks.

NOTICE

With the date of the Annual General Meeting drawing nearer, the **Federation of British Aquarist Societies** would remind affiliated Societies that various Offices are due for re-election. They are: Vice-Chairman, General Secretary and four Council members. Nominations for these Offices should be with the present General Secretary (K. Pyc, 35 Steeles Road, London, N.W.3) by 19th November, 1971.

Of course, no delegate (near Society either, for that matter) should need reminding of the importance of the occasion and it is hoped that as many of the Federation's 115 affiliated Societies will be physically represented as possible. Why not try and make an effort to get there—it's only once a year—although you'd be just as welcome at the other quarterly General Assemblies.

The latest Perpetual Trophy to be donated by a Society for open Competition is the Thurock Trophy for Siamese Fighters, B. splendens (F.B.A.S. Class Ea).

For those purchasers of F.B.A.S. Showjars who may have been disenchanted with the red metal lids there is a new stock in hand with black plastic lids; they are available through any affiliated Society—stock up now, they are cheaper too!

The Federation's aim is For Better Aquarist Societies—don't forget the A.G.M., 4th December, 1971, Conway Hall, Red Lion Square, London, W.C.1, at 2.30 p.m. Please come.

AQUARIST CALENDAR 1971

30th October: Kings Lynn Aquarium Society—first open show—schedules from B. Capper, 15 Marsh Lane, Kings Lynn.

31st October: Buxton and District A.S. first Open Show will be held at the St. Thomas

Moore School, Palace Road, Buxton. Details from Secretary, J. A. Snadden, "Rosedale," 29 Dale Road, Dove Holes, Buxton, Derbyshire.

31st October: Halifax A.S. Tenth Annual Open Show at Standeven House, Broomfield Avenue, Halifax. Show Secretary, J. Grundy, 19 Tower Gardens, Wakefield Grate, Halifax.

31st October: British Koi Keepers' Society, Rhododendron Room, Royal Horticultural Society, New Hall, 2.30 p.m.—4.30 p.m. All those interested in keeping and breeding of Koi are welcome to this informal meeting.

7th November: Mixenden Tropical Fish Societies Open Show will be held at the Mixenden Community Centre, Clough Lane, Mixenden, Halifax. All enquiries to S. Leedham, 74 Clough Lane, Mixenden, Halifax, Yorks.

13th November: A meeting of the British Cichlid Association (Northern Area) will be held at Ashgate Rise, Raw Gap, Knaresborough, Yorks., at 7.30 p.m. All details from D. Taylor at the above address.

14th November: Hertsford A.S. Third Open Show. Further details later.

14th November: Harlepool A.S. Annual Open Show, Longstar Hall, Seaton Carew.

20th November, 6 p.m.: Hendon and District A.S. Annual Congress at Whitefields School, Claremont Road, London, N.W.2. Speaker: Mr. A. Fraser-Brunner. Details and tickets from R. J. Deacon, 88 Cotswold Gardens, London, N.W.2.

21st November: Castleford and District A.S. Annual Open Show at Castleford Secondary Modern Boys' School, Castleford, Yorks.

Details from Joint Show Secretaries: Mrs. B. Cohen, 24 St. Oswalds Avenue, Pontefract, Yorks. Tel: Pontefract 72564; Mrs. M. Gates, 13 Beech Tree Road, Purston, Featherstone, Yorks. Tel: Pontefract 3213.

27th November: Annual Pur, Feather and Aquaria Show, King's Hall, Lower Clapton Road, London, E.5. Schedules from T. Doyle, London Borough of Hackney, 39 Lower Clapton Road, London, E5 0NU.

1972

5th March: Keighley A.S. Annual Open Show, Victoria Hall, Keighley.

12th March: Belle Vue A.S.: Open Show, Openshaw Lads Club, Gosley House, Ashton Old Road, Openshaw, Manchester. Details from Mr. R. Davies, 38 Wetherby Street, Higher Openshaw, Manchester 11.

21st May: Yeovil & D.A.S. Open Show, The School Hall, Church Street, Martock, Nr. Yeovil. Show Manager: Mr. D. Phinn, 5 Hill Terrace, Bowchurchton, Martock, Somerset.

3rd April: Southampton and District A.S. The Avenue Hall, Southampton.

23rd April: York and District A.S. Details later.

14th May: Derby Regent A.S. Open Show, Sherwood Foresters Recreation Centre (Normanton Barracks), Osbaston Park Road (A5111), Derby (follow R.A.C. signs). Show Sec.: R. G. Harlow, 180 Mansfield Road, Derby. Tel: 44322.

21st May: Cropton A.S. (F.B.A.S.) Open Show. Provisional Date. Full details later.

4th June: Accrington and District A.S. Annual Open Show. Details later.

Have you read

Coldwater Fishkeeping

by A. Boarder

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First Principles of Fishkeeping ★ Aquarium and Pond Maintenance ★ Water Plants ★ Foods and Feeding ★ Goldfish Varieties ★ Coldwater Fishes ★ Breeding in Aquaria and Ponds ★ Diseases and Pests.

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