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# PetFish

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## Comments and Quotes

Male and female mouth-brooding ●

Prolactin produces discus milk ● Chemicals and water snails

### Oral Nurseries

THE most usual procedure for fishes showing mouth-brooding behaviour is for the female to keep the fertilised eggs after spawning in her mouth at least until hatching takes place. The fry are often kept there for some time after this—up to two weeks or so. One species of cichlid from Israel has, however, now been reported to mouth-breed with both sexes sharing the egg- and fry-carrying. As this behaviour differs from that previously seen in what was thought to be the same species, *Tilapia galilaea*, from Lake Albert, Uganda, it looks as if the Israel ones might be another species altogether.

Another difference noted by Dr R. Apfelbach, writing in *NATURWISSENSCHAFTEN*, is that the *Tilapia* from Israel (usually considered to be the fish in Matthew 17, 27 of which it was foretold that it would be caught in Galilee with tribute money in its mouth) do not form fixed pairs that remain together after spawning as is the usual cichlid fashion. Apparently they associate only during the spawning act and then go their separate ways after this, each carrying eggs in the mouth. If these mouthbrooders from the different areas are in fact separate species which one will have to be re-named? It would seem that the Galilee cichlid has the greater claim to *galilaea* as a specific name, so the African one might in due course be allocated a new title. If they are not

different species this would be an interesting example of a change of breeding behaviour with geographical dispersion of the fish.

### Discus Milk

COWS, coconuts, pigeons and discus fish might not seem to have much in common on first consideration—but all of them produce a milk of a sort. 'Discus milk', the name given to the heavy skin secretion that forms on the parent discus fish after spawning, is used as food by the young discus in their early stages. There is a much more basic link between the three animal species listed above in this matter of 'milk' production than is apparent, however.

Milk formation in cows and mammals generally is known to be set off by a chemical substance (a hormone) called prolactin being released from the animals' pituitary gland. The same hormone promotes the formation of the crop fluid—'pigeon's milk'—used for the nurture of young pigeons in the nest, and yes, you've guessed it—if prolactin is injected into *Symphysodon discus* fish it causes the appearance of the milky skin secretion and also has been shown to have the effect of increasing the mucous cells in the skin of the brown discus fish *S. aequifasciata axelrodi*. The strange thing is that the prolactin formed in a mammal such as a sheep and artificially extracted from its pituitary gland

can act on the pigeon or the fish in the ways described when the extract is injected into them. The inference here is that in prolactin we have a substance formed within and used widely by the vertebrates for initiation of various processes connected with the feeding of their young.

That this is not the only possible role of prolactin has been shown by some investigations made in Massachusetts, U.S.A. on newts. Normally, the adults of these land-living newts enter the water only for breeding purposes, but under the influence of prolactin injections they are caused to seek the water and to undergo the typical skin modifications which

accompany the aquatic existence, although it is not the breeding season.

## Control of Water Snails

RESEARCH has been going on into chemical means of killing water snails in tropical regions where these animals carry one stage in the life cycle of the blood fluke, cause of bilharzia in man. One substance acting successfully as a snail-killer has been developed by the Shell

Agricultural Research Centre and tested in various tropical waters. Named Frescon (chemical name *N-tritylmorpholine*), it was found to kill all the snails in a large irrigation system in Tanzania when used at a very low concentration (0.025 part per million) and fish in the water were unaffected. The fish-keeper is bound to wonder whether here is an agent he can use to rid tanks of snails when they develop pestilential numbers. If Frescon became available at least it might be a means of clearing snails from new water plants before these were transferred to snail-free tanks that one was determined to keep snail-free.



### As Black as You'd Like

IN answer to the letter in April's PFM 'Not as black as it might be', may I add a few remarks?

True, most red-tailed black sharks offered for sale in dealer's tanks are not so black as they could be, but this I have found can soon be put right.

One or two facts must be remembered before going ahead. Firstly, the sharks have probably been travelling recently and this will affect their colour. Secondly, they are not in their permanent home so although the best will have been done for them the water conditions will not be perfect. If one wishes to purchase a

*Labro bicolor* my experience might help in choosing and installing one of these most attractive fish.

When buying your stock find a dealer who has a good reputation; he will be pleased to satisfy your requirements. Study the fish for a few moments before purchasing and ask if it would not be too much trouble for the dealer to catch the particular fish you want. The first you choose should be fairly active with a darkish hue, but may not be completely black. An important fact is to look for a plump one.

I have found that a well matured tank which shows a little algae suits their requirements best. The tank should be quite thickly planted. Temperature should be as directed in any good book, which should also give you details of pH etc. Feed with a mixed diet such as dry food, white worms and daphnia, alternating about every two days. Within two weeks your red-tailed black shark should be right at home; a little bigger, but most important, showing at most times a velvet black body.

Hounslow, Middlesex

A. JOHNSON

### More Co-ordination Required?

IN this country at the present time we have a Federation of British Aquatic Societies, a Federation of Northern Aquarium Societies, a Federation of Scottish Aquarist Societies, a Federation of South Wales Aquarist Societies, a Midlands Association of Aquatic Societies, an Association of South London Aquatic Societies, and it seems quite a few other such Associations or Federations.

Surely then the F.B.A.S. is misnamed, as in fact it is not a Federation of British Aquatic Societies but more of a 'Federation of Southern Aquatic Societies'. Taking this point even further, what about the areas which have no 'home-based' federation, e.g. the South Coast?

In addition to the above organisations we have the Goldfish Society of Great Britain, who, as well as most of the other organisations, also appoints its own judges, not to forget the Fancy Guppy Association, the Federation of Guppy Breeders Societies, the British Killifish Association, and the newly formed Marine Study Society, all of which have members all over Britain.

There seems to be no co-ordination between any or most of these bodies, demonstrated by the fact that most appoint their own judges, judge to their own standards, and all these are quite different in most aspects.

Surely what is lacking is not organisation (there seems to be too much of this) but co-ordinated organisation, and mutual agreement and recognition among these bodies.

This I must stipulate is purely my personal opinion, and I would like to see comments on this topic by other readers.

London, N.19

G. JENNINGS  
Judge, F.B.A.S.

### Those Marine Classes

UNTIL this year, Newport A.S.—the Society of which I have the honour of being show secretary—has been quite unique in that it was the only Society within this area to hold an Annual Open Show, the word 'Open' being interpreted in its widest possible sense—namely a show open to any aquarist, without any dis-

crimination against professional or amateur, novice or expert, or whether a member of any recognised society or not.

The Society's uniqueness will be further enhanced in September of this year, when in its Fourth Annual Open Show we will be further extending our Schedule to include a class for a highly interesting new branch of the hobby, the keeping of native and tropical marine fish.

To my knowledge the only other Society having catered for such interests before is Portsmouth, though on how they fared I have little information. I do understand, however, that such a class is to be provided by them for their exhibitors, once again, this year.

When my Society first announced our intention of providing marine classes I received much correspondence, particularly about its practicability and whether such classes were really required by the general aquarist. The answer to the last question must undoubtedly be 'No!', but on this point I should stress that it is a policy of my Society to cater for the minority as well as the majority of aquarists. Furthermore, the Federation of British Aquatic Societies have notified me within the last few days of their decision of backing this venture by the awarding of a trophy to be won outright by the successful competitor in the class under discussion. In addition, two perpetual trophies are to be presented to the Society by Mr G. H. Jennings, secretary of the Marine Study Aquatic Society of Great Britain.

A Society from the Principality of Wales, therefore (together with Portsmouth) has taken the lead in the provision of marine classes. Let this not be all; I look forward with keen interest to seeing further developments along these lines.

In conclusion, I would add that we in Newport are looking forward to a record entry at our show on Saturday, 17th September. Schedules are promised from the printers by 30th June next, when I would be happy to forward same to any interested individual or representative of a Society. A 6d stamp for postage would be gratefully appreciated.

M. J. PARRY  
Show secretary, Newport A.S.

As the show secretary of the Nottingham and District Aquarists Society, whose duty it is to stage the National Open Aquarium Show sponsored by the above Society, I would be interested to hear what classes of marine species marine aquarists want to see incorporated in a Show Schedule.

We as a Society are prepared to offer facilities at our next Show (3rd-4th September this year), making available aquaria, heaters, aeration, staging, but not water or filtration. These last two items we think could be supplied by the competitors as we assume they would prefer to use their own water.

If some indication can be given of the classes required these would be incorporated into our Schedule. Prizes would be awarded as in other classes—in fact, it could open up other possibilities as regards special trophy or trophies.

It is essential that I am contacted very early as the programme is now well advanced and ordinary schedules are ready for printing.

W. J. CHRISTIAN  
Show secretary, N.A.D.A.S.

## Prize Letters

TO the writer of the letter judged by the Editor to be specially worthy among readers' letters published in each month's issue, **PETFISH MONTHLY** will award a prize of a well-known make of aquarium aerator (as pictured here).



**PETFISH MONTHLY** will be glad to have your experiences, comments, suggestions etc. in letters on any matter associated with fish-keeping. Write to the Editor, **PETFISH MONTHLY**, 554 Garratt Lane, London, S.W.17.

## Our First Issue

I HAVE been awaiting with interest the first edition of your new magazine **PETFISH MONTHLY**. So that when I received my copy I naturally examined it in fine detail. The various articles covering a large part of our hobby were both interesting and also well worth taking note of as all the writers are experts in their own particular sphere of our hobby.

While I expected **PETFISH** to be of a high standard, I was pleasantly surprised that even my best expectations were exceeded. It is often the little things that make such a difference to the whole and in this respect the printing of the magazine is particularly to be commended.

I shall be looking forward to future editions and if the present standard is maintained I am sure that **PETFISH** will become a must for the aquarist.

J. V. MORRICE,  
London, N.8  
Lecturer and Judge, F.B.A.S.

## Dormancy of White Spot

I READ with considerable interest Mr Perkins' letter 'Anything New about White Spot' (**PETFISH MONTHLY**). I have experienced similar behaviour in my 4-ft. community tank. A heavy outbreak was cleared with quinine sulphate, but a few months later a newly introduced pair of green mollies were found to be infested after 4 days. These were treated in a separate tank with methylene blue, cured and successfully re-introduced to the 4-ft. tank. The source of the mollies was known to be 'clean'. A pair of blue acaras behaved in a similar manner, when newly introduced, although the remaining fish appear perfectly healthy. I have often discussed the 'dormant' theory with friends but no explanation is forthcoming.

May I congratulate you on your very fine first issue.  
M. H. ELSON  
Dorking, Surrey

# Shipment of Fishes From South America

**ERIC BOWLER**, well-known British fish importer, recently travelled to the Caribbean and British Guiana. Here he describes his trip and the methods used by fish-shippers in South America.



Mr A. Greenberg (left) with Eric Bowler at the Everglades Aquatic Nurseries, Florida, visited by the author on the return leg of his trip to British Guiana

**M**Y motives in planning my trip to South America were mixed. There was a growing awareness of the need to meet our fish suppliers in that region on their own ground, to discuss matters affecting the transportation of our supplies; I wanted also to look into sources of marine tropical fishes from the central American area, and lastly although not leastly I was overdue for a holiday. I decided to make the trip a combined business and holiday one, and agreed with my friend Mr Tom Horman, who arranged to accompany me almost at the last moment, that the scheme was to start with what would be mainly a week's laxe on the sunny beaches of Nassau. But this plan was upset by an unlooked for event in the shape of Hurricane Betsy.

Not only did the overcast sky, high winds and filthy beaches make visits to the coral reefs impossible, but as no flights were in operation we had to stay put unproductively for a whole week. Even the public aquarium was closed!

By the first available plane we took off for Montego Bay, Jamaica, and then motored through Ocho Rio to Kingston, looking at the rich growths of coral and gorgeous fishes in the pools on beaches of the northern side of the island on the way. From Kingston we 'island-hopped' by plane to Porto Rico, Antigua (with an overnight stay at this capital of the Leeward Islands group), Dominica, St Lucia (another overnight stay) and Trinidad. All of these islands are beautiful, with exciting coral reefs throughout the area.

We spent four days at Trinidad, where although it seems to be still in its infancy the hobby of aquarium-keeping is gaining ground. I saw about five pet shops including fishes in their stock, and one specialised in fishes only. Local species shipped from here, mainly

to the U.S.A., are *Pterostomus* and *Corydoras* genus, collected by boys who swim in the rivers wearing underwater face masks and who catch the fishes by hand. There is Government control of these exports, with a close season in which exporting stops, and it must be remembered that the fish are items on the local diet as well as sought-after specimens for aquaria!

Our last flight was to our destination, Georgetown, British Guiana, an area which is excessively hot all the year round. Some six professional shippers of fishes have their premises here, four of these being very large establishments close to the airport. Fishes collected from a very wide area by teams of boys (one exporter has about a dozen such teams working for him) are held in oil drums that have been cut in two along their length and painted with aluminium paint. About three or four hundred of these containers were in use in one establishment, all containing water specially collected in lorry tankers from clean streams. The drums are kept under cover to keep off the sun's glare.

The fishes are kept for only two or three weeks at the most in this way, batches continuously being shipped out to the airport. If disease is seen to be present, treatment is applied in the holding tanks before exporting. I saw one consignment of fish ordered for South Coast Aquatic Nurseries being loaded for the trip by air to Britain, and I was impressed by the care and trouble taken. Fresh



Top: main stock house (129 ft. by 60 ft.) used by shippers in British Guiana

Middle: transport canoe on the Santa River

Bottom: loading boxes of fish for the airport

water was used for the plastic bag transport containers, for example, not the water from the holding tanks.

Rivers from which the fishes are collected look like rivers of tea, so turbid is the water, and the water is also quite acid. In the main stream temperatures are around 80°F (27°C), but reach much higher figures in the shallow pools on the savannah. Fishes are not only caught by the teams mentioned above but are also collected by them from the native Indians in remote places. Some catches spend seven to ten days being conveyed back to the exporters by canoe, being kept in square ex-petrol cans, some two hundred or so fishes in each, with regular water changes on the journey. They are not fed during this time so that water cleanliness is aided.

It is galling to realise how many exciting species are caught and rejected, so that they never reach our market, because they are not available in the numbers required to make the handling of them a commercial proposition. One of our shippers' greatest problems I found was that as they pay their teams of collectors for fishes whatever the types brought in, at times of abundance of some two or three species the shippers are apt to get greatly overstocked with these because they are the ones most easily caught.

Numbers of fishes available fluctuate very much in seasons, and also the handling problems may vary. For example, in the dry season with the reduced water flow the acidity of the water increases, and the fishes are much more susceptible to risks of changes of water at the holding station.

Shipping to Britain until recently was done from Trinidad, so that the fish had first to be flown there from Georgetown, but now the air lines have arranged a direct weekly run from Georgetown through Trinidad and Bermuda to London, with a total travelling time of less than 24 hours. Not only Britain's South American fish supplies come through this channel but also those for Europe generally come through London. With this improved service more South American fishes are reaching us than ever before.

After our discussions at Georgetown were complete we flew to Miami (with an overnight stop at Trinidad). Miami is the main U.S.A. centre for imported South American fishes, which are distributed from there throughout the U.S.A., although California is now also being served direct from British Guiana.

In the Miami area there are about eighty professional fish farms, all very large. Conditions there lend themselves to this activity very well, for easily tapped subterranean water supplies are available for constant circulation through the ponds and tanks of the fish farms all the year round at 75°F (24°C). The water is, however, quite hard.

Breeding and hatching of a wide variety of species is undertaken on these farms as well as the distribution of the imported fishes. Very large livebearers are produced in outdoor ponds by putting a batch of females and males in a pond and completely emptying it to collect the 'harvest' after five months. The stock is then moved to concrete tanks for grading.

At Tampa I visited a friend, Mr A. Greenberg, collector of fishes and leading authority in the U.S.A. on water plants, to see the marvellous 'botanical garden' of his own making. His 80-acre aquatic plant and tropical fish farm (Everglades Aquatic Nurseries) was

the first one established in Florida, over 30 years ago, and to illustrate how very well liked Mr Greenberg is, it can be mentioned that all his staff with the exception of one or two have been working for him since the farm opened. Most of his staff were teenagers when they first joined him! Two very enjoyable days were spent with Al, as Mr Greenberg is known to his friends, staying in the guest house that he has specially provided for the constant stream of visitors he receives from all over the world.

There are at least 60 retail pet and tropical fish shops in Miami. These are large premises, of proportions reminiscent of our supermarkets, although their display space is used quite generously. Size of the fishes offered for sale is much greater than that of similar fishes on sale in Britain, although this is probably the result of the extreme local competition for business in an area such as Miami. Coloured gravel was very much in evidence in the display tanks, and plastic plants of realistic appearance were also apparently very popular.

Our last visit was to New York, where we looked at several of the larger retailers of tropical fishes. Here

again the coloured gravel and plastic plant décor was being used. Prices were difficult to compare with those in Britain, but the impression gained was that they are generally higher.

With all the business part of my trip completed, although feeling it had all been most worthwhile, I began to wonder what had happened to my holiday plans, upset at the outset by the hurricane. Determined to make the last part of my holiday pure relaxation, and thinking that little could interfere with the carrying out of the bright idea suggested to me in New York of flying back home overnight in a plane that provided a cinema show, I spent nearly a whole day altering the return flight arrangements with this aim. The plane was delayed nearly two hours at take-off and by the time we were airborne and the film had started I was fighting to keep my eyes open and focussed on the screen.

Once again my plans for relaxation had been foiled, but in retrospect the whole five weeks had actually given me all the holiday I needed, despite the fact that I had spent almost no time away from fishes and the problems of their importers!

## PetFish Photo Tip

### How to replant an established aquatic having very long roots

**The problem:** when a large and well-established water plant has to be moved and re-planted what do you do about its roots? Such a plant is the Amazon sword plant shown in picture no. 1 (right). In a year its roots had spread in a radius of 9 inches. To dispose them again naturally is impossible and to attempt to do so would damage them.

**The solution:** the roots are gently bunched together and then loosely circled around one finger (picture no. 2, below). Then, with the roots still held looped around the finger they can be pushed beneath the gravel (picture no. 3, below right). When the finger is slipped out of the loop it has formed the gravel taking its place in the loop should hold the roots and the plant anchored. The roots should be pushed quite deeply into the gravel and the plant subsequently raised so that the origins of the leaf stems are just above the gravel's surface.



1 ▶



◀ 2



3 ▶



## DISEASES OF AQUARIUM FISHES: Part Two

# Modern Treatment of Disease

By Dr WILLIAM M. STOKOE, B.Sc., M.R.C.V.S.

(Department of Veterinary Anatomy, University of Edinburgh)

UNTIL the introduction of modern drugs such as the sulpha compounds (sulphonamide drugs) and the antibiotics, few bacterial and viral conditions of fish could be treated successfully. Today the position has radically altered and since treatment of such diseases now follows principally the same lines, it is convenient that a brief survey of pharmacology of aquarium fishes be considered before dealing with specific infections.

Sulphanilamide, sulphadiazine and sulphamerazine, for instance, are probably the most efficacious of the sulphonamides when used in doses of 10-25 grams per 100 litres (22 gallons) of aquarium water. Fishes are well able to withstand such concentrations but if eventual toxic reactions resulting in kidney damage, anaemia and leukopenia (a decrease in numbers of white blood cells) are to be avoided, treatment should be limited to three days, followed by a complete change of water.

Amongst the antibiotics, penicillin is probably the least efficient in the aquarium, for the majority of bacteria pathogenic to fish are of the type described as Gram-negative, on which penicillin has least effect. At the same time, penicillin is destroyed comparatively rapidly in aquarium water.

Aureomycin and terramycin on the other hand, are as effective as any of the 'wide-spectrum antibiotics' but they have the disadvantage of staining the water after several days have elapsed, thus giving rise to the need for at least a partial change. Aureomycin has the added disadvantage, too, in that though prolonged use may accelerate growth rate and accentuate skin coloration, it eventually leads to a

loss of fertility amongst treated stock.

Chloromycetin, bacitracin and polymyxin, however, have none of these flaws and, indeed, if given in the doses and combinations recommended in the Table, they have on occasions been known to be effective against fungus as well as *Ichthyophthirius* (white spot) and other protozoan infections.

## Common Bacterial Diseases

*Columnaris*. Since it was first described in 1922, columnaris disease has been known by a variety of names. By virtue of its so often attacking the genus *Mollinia*, it has been referred to as 'black mollie disease'. Others have called it 'cotton wool disease', and since it is

characterised by the formation of a fungus-like slime, it is still wrongly known as 'mouth fungus'.

Garnjobst was the first to isolate the causal organism in 1945, and recognise it as the highly contagious slime bacterium *Chondrocyclus columnaris*. For this reason therefore it is much preferable that the disease be known as 'columnaris'.

The onset of columnaris—which gains entrance to the host through injury—may be slow and insidious, often recognisable only by anorexia (loss of appetite), and the surface hugging of newly imported fishes in well-oxygenated tanks. Thereafter the disease manifests itself more emphatically, with the appearance of fungus-like growths resembling white cotton tufts around the cheeks and mouth of affected fish. Often the lips may become swollen and macerated and, if left unchecked, the

## Antibiotics for Treatment of Fish Diseases

Antibiotic	Dose	Repeat of dose
Chloromycetin	250 mg. per gallon	Every 24 hours
Polymyxin	250 mg. per gallon	Every 12 hours
Bacitracin	250 mg. per gallon	Every 12 hours
Chloromycetin Neomycin	250 mg. of each per 2 gallons	No repeat treatment necessary
Chloromycetin Penicillin Streptomycin	250 mg. of each per 3 gallons	No repeat treatment necessary

● Antibiotics are supplied only on prescription from a medical or veterinary practitioner. Consultation with a veterinary surgeon will ensure that the correct preparation and dose are obtained.

disease rapidly progresses to the stage when the whole of the frontal area of the skull is eroded away, whereupon death soon supervenes.

Fortunately, the disease can be readily arrested by early dosage with chloromycetin. Alternatively, swabbing the affected areas with Lilly's tincture of merthiolate can prove equally effective, though thorough disinfection of tanks and quarantining of suspect fish must follow to avoid subsequent secondary outbreaks.

**Fish congestion and tail rot.** Fresh-water or marine fishes maintained for long periods in sub-healthy aquaria are prone to develop bacterial fin rot, particularly of the caudal fin or tail. The causal organism is a Gram-negative, non-sporulating bacillus having many shapes, though

secondary infections of fungus frequently occur. Highly pigmented fishes such as black mollies seem most susceptible to the disease, and affected fish usually die on the third day after its onset.

Damage to the skin, involving loss of scales, is the usual mode of entry of the bacillus, for the symptoms involve inflammation of the scale pockets, loss of scales, ulceration and eventual septicaemia and death.

In its early stages the disease can be contained by improving aeration and general aquarium conditions and by adding either Albacid (1 gram to 10 litres or 2 gallons of water) or trypanflavin (1 gram to 100 litres or 22 gallons of water) to the infected tanks. Alternatively, the disease has been successfully treated by the addition of 15,000 units of penicillin per gallon.

If after 48 hours no complete recovery is attained, however, surgical treatment should then be applied. This consists of removing the affected portions of tail or fins with scissors. The incision must be taken through the immediate healthy zone of the tail or fin to ensure that all the affected zones are eradicated, and thereafter the wounds should be daubed with 1% silver nitrate, followed by a 1% potassium dichromate solution.

Other than that, regardless of the general treatment, even if it should prove successful, it should be continued for at least seven days after all signs of the disease have disappeared to avoid sporadic recurrences.

#### NEXT MONTH:

Other bacterial diseases.



#### Gravid Mollies

*A female molly that I bought recently for breeding purposes quickly produced fry, all of which appeared to be dead at birth. Is it likely that this will always happen with this female?*

The fry were born prematurely. It is possible that the female molly is structurally imperfect but most likely the premature births were caused because the female was moved from one tank to another too near the time of birth. Mollys dislike being disturbed in this way and the female should be placed in a spacious breeding trap or, better, in a planted tank on her own, as soon as it appears that she is gravid.

#### Cichlid Feeding

*I have recently acquired a large Oscar which will eat nothing but gentles. Is this food providing it with sufficient nourishment? It is extremely inconvenient having to obtain the gentles in any case, and I understand that it could be eating pieces of meat and garden worms.*

Large cichlids will usually take

small pieces of meat, liver and garden worms, but if they develop a marked preference for one food it is sometimes not easy to persuade them to try another. However, you may well find that if the Oscar's usual food is withheld for a few days it will be more than willing to eat anything that is offered it. The gentles are apparently being fed in sufficient numbers to provide the fish with nourishment for otherwise it would be willing to try another food.

#### Indian Fern

*Can you give me some advice on growing Indian fern? I have no success with this plant at all.*

Indian fern can be a difficult plant to get established from small specimens. If you buy small plants allow them to float on the water surface until good root growth occurs and the spread of leaves is three to four inches across. The roots can then be planted in the gravel but care must be taken that the bases of the stems are well above the compost to avoid rotting. Planting in a small pot containing a nourishing medium such

as two parts of soil to one part each of gravel and peat (the top being layered with coarse gravel and the whole hidden behind a rock) is recommended for this plant. It prefers soft, slightly acid water (pH 6.8-7.0) and grows exceptionally well in diffuse natural light; under shaded greenhouse conditions in summer it really thrives, but this does not mean that the artificial lighting in an aquarium will not suit it if other conditions are to its liking.

#### Brackish Tank

*I have a 24 in. by 12 in. by 15 in. well-planted community tank containing sword, moon, mollies and red-finned sharks which I have had for a year, and I would like to start a second tank now. I want something perhaps a bit more adventurous and different. Have you any suggestions?*

Starting a full-scale marine tank might be a little too adventurous at this stage—but a tank prepared for fish that prefer brackish water could make a pleasant contrast to your planted tank. A sea salt content of four teaspoons per gallon of water would be suitable for Malaysian angels, scats, bumble bees and puffer fish. Instead of plants (though the fish themselves should get a ration of duckweed and spinach to make up the deficiency) a most pleasing effect can be obtained with rock work selected for the graining, coral and sea fans.

## Tropical Fishes of the Genus *Barilius*



Rainbow barilius (*Barilius ornatus*)

In a recent importation of fishes from Thailand a number of unusual specimens of the genus *Barilius* were received by Inter-Pet Supplies and have been provisionally listed as the 'rainbow barilius'. They have been identified for PETFISH MONTHLY by A. FRASER-BRUNNER, who discusses here the features of this group of fishes and the facts known about their requirements in aquaria.

**M**ENTION of the genus *Barilius* is very rare in aquarium literature, for the reason that the fishes of this group do not take kindly to capture, transport or confinement in the usual static tank. They are usually found in fast-flowing, well-oxygenated and rather cool streams—very much like the places in which we would expect to find trout. Indeed, these fishes, although belonging to the family Cyprinidae, the great carp family, are often not unlike trout in general appearance; perhaps they occupy a similar ecological niche in areas where trout do not occur. But although some of the Indian species grow large enough to be regarded as sport-fishes, they do not reach the size of trout, and are often to be found in shoals.

In the old German reference book, *Fremdländische Süßwasserfische*, by Arnold and Ahl, the Japanese *Barilius neglectus* was included as an aquarium fish, and this is the only species that has been kept with any success since that time, and the only one to have been bred. In the recent *Freshwater Fishes of the World*, by Günther Stebba, an African species, *B. christyi*, is included. That is all that fish-hobbyists have heard of the genus until now.

It is difficult to assess exactly how many species of *Barilius* actually exist; perhaps about fifty. These are to be found in Africa, India and southern Asia eastward to Japan; but none occurs in Malaya or the Indonesian islands.

As might be expected, fishes from fast-moving waters require plenty of room and either constant circulation or aeration strong enough to maintain a current. They do

not require such high temperatures as fishes from swamps and pools, neither must the water be as soft or acid. Success will more likely be achieved with most of them by providing rather hard, slightly alkaline conditions.

It would, however, be foolhardy to lay down hard and fast rules for keeping any species of *Barilius*, as so few have been seen in captivity.

### General Features

Specimens of *B. christyi*, from the Congo, were kept in circulated, slightly alkaline water at the Van Kleeft Aquarium in Singapore, and over a period of about three years they reached a length of 6 inches. They were not observed to spawn, although had they done so the conditions in a public exhibition would have made the chances of survival of eggs and young very unlikely.

In shape, the body of the various *Barilius* species may range from something very like a *Danio* to the more elongate form of a trout alevin. The mouth is rather large and seems to increase in size with age. The dorsal and anal fins are about the same size, but in some species (e.g. *B. christyi* and *B. neglectus*) the dorsal fin is placed above the anal, in others (e.g. *B. ornatus*) the dorsal fin is farther forward. The lateral line passes along the lower side of the tail; in some species it is complete, in others incomplete.

A common colour pattern is a series of cross-bars or

blotches, very reminiscent of those of young trout, but in some species these are absent or there may even be a stripe along the side.

**Species mentioned:**

*Barilius ornatus* Sauvage 1883

*Barilius neglectus* Stielor 1907

*Barilius christyi* Boulenger 1920

Although we have not noticed any special difficulties about the keeping of the rainbow barilius under ordinary aquarium conditions it has been observed that they become very agitated if a strong light reaches the tank

from the side. Such illumination does reveal the beauty of the gentle colours of this fish, but in an aquarium opposite a window from which the afternoon sun reached them the fish showed great distress. Their intolerance of poorly oxygenated water was shown when two specimens were moved into a small tank for photographic purposes. The tank had been used for two much larger fish just before this, and the rainbow barilius very soon began to swim erratically; one died after about ten minutes. The other one recovered immediately when it was returned to the aquarium with the batch from which it had been taken.—EDITOR.

Is it  
New  
to  
You?



Photo: LARRY STIMSON

AN unusual tropical from South America now being imported is the arowana (*Osteoglossum bicirrhosum*). At first glance it is the elongated, tapering and almost strap-like body with its long anal and dorsal fins that draws attention, but one of the fish's most unusual features is the forked pair of dark-coloured barbels held out prominently in front of the lower jaw, and these, in conjunction with the large trap-like mouth and big gold-rimmed eyes soon excite one's interest. Markings of the arowana are attractive, too. The large pectorals, held out like butterfly's wings, have conspicuous black rays. Although body colour is an even olive-green, it is relieved by a dark ocellot just above the pectorals that

has a gold crescent behind it.

The aquarium specimens generally available are about 3 inches in length but these are in fact mere babes, and some of them we have seen in importer's tanks (Chiswick Aquaria, London and Fanday Aquaria, Birmingham) have had the orange-coloured yolk-sac still present. Just how big they will grow is a matter of conjecture, as lengths from three to nine feet have been mentioned by various sources. Mr J. Goodman of Chiswick Aquaria has an arowana about 10 inches long which displays the large and prominent scales that are characteristic in this species and others of its group. Growth is said to be rapid in spacious living conditions and with good feeding. The youngsters, although shy at first, will

take small fishes such as livebearer fry, also water fleas and aquatic larvae.

ALTHOUGH so far we have seen only one specimen (at Keith Barraclough, Bradford) the presence of the eyespot cichlid (*Cichlasoma ocellaris*) among importations is worth mentioning as an example of the hitherto unseen fish from South America that are now reaching us. This one is strictly for the cichlid specialist prepared to go to great trouble to cope with its large appetite and space requirements. The fish seen was 10 inches long and showed an unusual feature for this group in the two-part dorsal fin. A colourful cichlid, the 'eyespot' of its name being present on the caudal fin.



Photo: W. J. HOWES

## Pond Plants to Try Out this Year

By Dr W. E. SHEWELL-COOPER

**W**ATER salvia (*Stratiotes aloides*) is one of the most unusual plants to grow, with long tapering serrated leaves, plus flowers, and it will either grow floating on the surface of the water, or it can be attached to the bottom of the pool, or even the aquarium. Give the plant plenty of room to spread and it may easily be a foot in diameter. I always think the flowers look like cactus dahlias. Unfortunately they float just under the surface of the water. The colours, curiously enough, vary with age and environment. On the whole it is better not to plant a water salvia but just drop it in the water and it will find its own root-hold.

Bladderwort (*Utricularia vulgaris*) is not on the whole easy to obtain (I only hope some nurseryman who sees this will write and tell me that he has got plenty of plants!). This floating aquatic is insectivorous. It has largish bladders which attract the water fleas and such like and then digest them to assist in its own growth. Its leaves are thin and hair-like, and tiny yellow flowers are produced well above the surface of the water. It is quite a useful thing to have as an oxygenator, not only in a pool but in an aquarium too.

It is rather fun to try to grow a submerged aquatic that is edible—water cress, for instance, which is a quite good oxygenator in fact. *Rorippa nasturtium aquaticum* will not grow, however, unless it has some running water, and it is better, too, if the pool is shallow. Water cress spreads very much and becomes a nuisance in time, and that is the reason why it has lost its popu-

larity in gardens. Furthermore, it has not any flower.

Far prettier are the various bog and aquatic members of the buttercup family. A submerged aquatic is water crowfoot (*Ranunculus aquatilis*) with leaves divided into hair-like segments and having upper leaves that are three-lobed and floating. Its flowers are white with yellow stamens.

### Fair Maids

A plant to grow near the water, or even just in a shallow pool, is *Ranunculus lingua*. This has undivided leaves and branching stems carrying the typical yellow flowers. The petals are like shining brass and they usually look magnificent from July right the way through to the third week of September. There is a variety, *grandiflorus*, which is even more magnificent, although usually a little more expensive to buy. For the waterside I am going to recommend *Ranunculus acemifolius*, variety *flore pleno*. This is sometimes called the fair maids of France, or perhaps more rightly, the fair maids of Kent. It produces beautiful double white flowers and dark green leaves which I always think are palm-like.

Most species of the pondweeds are a nuisance, but one or two of them are fairly suitable for pools as oxygenators. *Potamogeton pectinatus* is often called the fennel-leaved pondweed because its leaves are almost hair-like and it produces much branched stems and foliage. I like it because it gives good cover for small fish in the breeding season. The slender pondweed *P. pusillus*, if you can get it, is another you might try; it has thread-like leaves and stems, plus brownish flowers which are borne just above or just below the surface of the water.

## New Books

### Aquarium Techniques

1: *Care and Equipment* (79 pages). 2: *Fishes and Plants* (104 pages) by A. O. Janaz.

Colour plates, line drawings. Merlin Press, London. 12s 6d each part.

**T**HESSE two volumes form excellent beginner's guides to aquarium-keeping and will interest especially the do-it-yourself type of aquarist (although for some unexplained reason he will find himself referred to as an aquarist in Mr Janaz's books). Thus in volume 1 detailed instructions for tank-making, arranging lighting and aquarium supports are given along with some suggestions for home-made air pumps. Setting up, foods, pests and diseases are also the province of this volume. Both cold-water and tropical aquaria and their inmates are covered, fishes and plants forming the topics of volume 2, which carries the subject index for both volumes. The books are attractively presented and the illustrations of equipment are especially well done.

Anthony Evans

## PETFISH MONTHLY visits

### Mr B. Bell at Home

SPRING was very much in the air the day I made my visit to Mr B. Bell's home at Chessington, Surrey, and I found him hard at work clearing an overgrown plot of land for potato planting. Mr Bell, 'Bernie' to his many fish-keeping friends and acquaintances, is chairman of Clapham Aquarists Society, in whose area he lived until recently. He told me how his removal involved dismantling the fish house he maintained at his old address, and how with a garden to restore and the work of adapting his house for his family he had been forced to become merely a 'two-tank man'. But don't let that mislead you—one tank in his lounge is six feet long and the other one (a tank or a raised pond, according to your view) in the garden is 12 feet by 30 inches by 30 inches!

The joining up of two rooms by removal of the partition wall left a convenient space between two chimney breasts into which Mr Bell has installed his large tropical aquarium. It meets the eye as soon as the room is entered, and is a pleasing feature to view from any part of the room. Overhead fluorescent lights for the aquarium are concealed beneath a hinged 'lean-to' type cover that can be lifted up and held open by cords.

Some large specimen fishes form prominent members of this tank's community, largest being a giant gourami (*Ophiocara goramy*) that spends most of its time at one end of the tank with a large black shark (*Morsular chrysocephalus*), each of these fishes showing marked individual animosities: the gourami towards a brown acara, a *Plecotomus* who lives mainly under an arch of rock being chivvied from time to time by the shark. Tinfoil barbs, blue acaras, mollies and swordtails are



amongst other fishes included in this lively display.

Undergravel filtration is used, with air flow from a piston pump under the cover, and in addition two or three times a week a home-made circulating system incorporating a filter is switched on for about an hour. An ex-washing machine pump, driven by a tenth horsepower motor and concealed together with the filter in a cupboard beneath the tank, provides a powerful delivery that swirls heavier sediment towards the siphon outflow at the other end of the aquarium. The filter was made from an old pressure cooker and is packed with glass wool. When I was being shown this system in operation



Photographs on this page show Mr Bell with his garden pond. A view from above (top of page) and a picture (left) of the glass panel in one side of the pond are presented. Nearly six feet in length, the glass panel is three-quarters of an inch thick.



Mr Bell's lounge aquarium (six feet by 18 inches by 18 inches) with the cover closed (left) and raised (right) to show the overhead fluorescent lighting and also piston pump aerator

Mrs Bell laughingly said, "There'll be some other homes with floods in their living rooms if you pass on the details of that!". However, Bernie assured me that this had happened only when the pump had not remained primed with water as it should do, so that the outflow caused the filter to fill up and overflow. By means of a cock on the siphon the outflow is normally adjusted to keep pace with the return flow.

Mr Bell mentioned that poor plant growth was a problem he had met for the first time since setting up this tank, but with large fishes and plant-nibblers such as the gourami and the tin-foils. Amazon sword plants are about the only ones that get a chance to make headway.

In his rear garden, which slopes upwards away from the house, Mr Bell has designed and constructed a special coldwater aquarium. Built of bricks faced with concrete, the rear wall of this tank also serves to retain a levelled patch of lawn that incorporates a shallow pond at its far end. In the front wall of the tank is fitted a long panel of glass (three-quarters of an inch thick) and the wall is faced with attractively coloured roughcast bricks.

Goldfish, shubunkins, mirror carp, gudgeon, tench and some very fine large dace live in the tank, and some of Mr Bell's angling friends have promised to help him to add to the collection. Plants for the upper surround of the tank, which is made with a trough for earth, and for another planting trough on the sill of the viewing panel, will add to the attraction of this garden feature as they make growth.

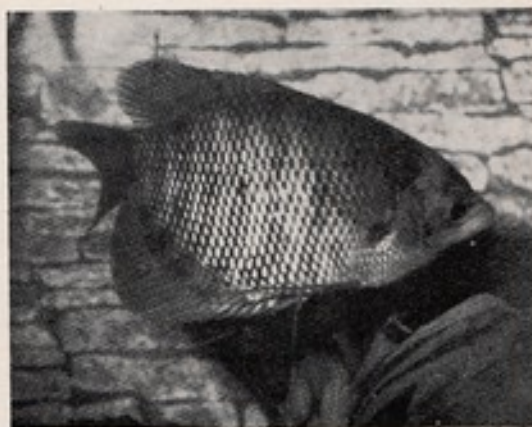
Mr Bell is an active participant in inter-club shows, at which he has gained many awards, including a medalion from Riverside A.S. for breeding *Corydoras paleatus*. In the fish house he used to maintain he also regularly bred angels, fighters, cherry barb, white cloud mountain minnows, zebras, thick-lip and opaline gouramies, blue scaras and livebearers, but at the expense of spare time that he can no longer give. Even so, he hopes to breed shubunkins in the garden this year.

He has combined his other hobby of cine photography

with his aquatic interests by making films of his fishes and also of other club-members' home aquaria. Mr Bell uses an 8 mm. Cronica camera with a *f* 1.8 zoom lens, and he let me see one colour film that he has shown to several South London societies. He said that he is willing to loan this to clubs planning film shows, although it is best appreciated if seen together with his personal commentary on the community tanks, angel and fighter breeding shots and big fish sequences that it includes.

As an amateur film-maker Mr Bell was specially delighted when some of his large tropical fishes were borrowed to stock tanks used for a T.V. film made for "The Avengers" series last year, so if you are a devotee of Steed and Emma Peel you have probably already had a glimpse of his 'big chaps' on your home screens.

**Anthony Evans**



Prize winning giant gourami owned by Mr Bell

## Plastic or Concrete?

Durable ponds can be made from moulded fibre-glass, liners of modern toughened plastic sheet or of concrete. Now that ready-mixed concrete deliveries take much of the hard work out of concrete pond-making, use of the old time-proved medium is becoming popular again.

IT is now six years since I was bold enough to be the first person in this country to offer plastic sheet to the public specifically for the purpose of making a pond. Many years of experience before this in making ponds from concrete, makes me feel qualified to discuss the relative merits and disadvantages of both methods of pond-making. As many readers may be contemplating pond-making this year, I propose to deal in detail with both concrete and plastic ponds.

Concrete, which had been used for many years, went out of fashion because of the ease and relative cheapness of using plastic sheet. After a few years polythene sheet ponds suffered a set-back because of the relative ease

with which they could be holed. Very much tougher PVC and Terylene-reinforced PVC sheet (Plastolene) were then introduced; although infinitely tougher than polythene, and producing a more permanent pond, they are very much more expensive. There are also ready-made fibre-glass ponds.

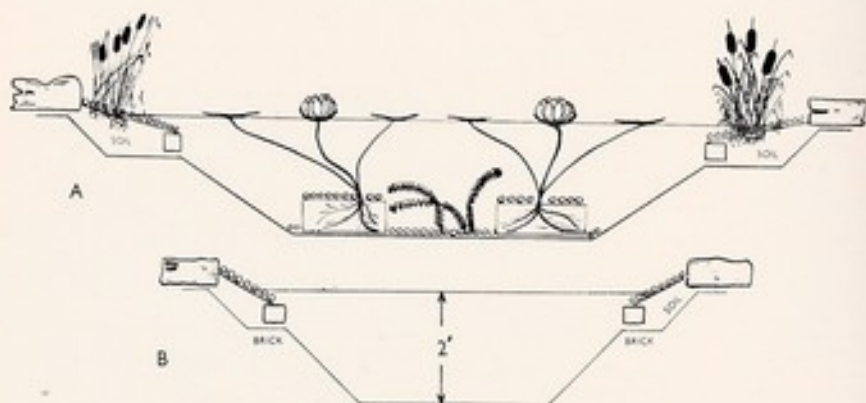
It is doubtful if we have much more to learn about concrete ponds. Difficulties met were the hard work involved in mixing the necessary concrete, and the problem of completing the operation in one day, desirable to prevent cracks appearing later. However, most areas now have contractors who will deliver ready-mixed concrete to your front door and this has redressed the balance.

It is now only necessary to wheel-barrow the ready-mixed concrete to your excavation and the job can be

By N. H. BENNETT

completed in a morning, especially if you have a friend or neighbour to help you. The cost of this ready-mixed concrete is little more than that of buying the separate materials yourself, and you are spared the unbelievably hard work of making concrete. Locally we are charged 77s 6d per cubic yard delivered. One cubic yard equals 27 cubic feet, which is quite a lot of concrete.

Two cubic yards will make the pond described here



Sectional views of the length (A) and width (B) of an ideal pond made in concrete or in plastic. Suggested dimensions: length, 10 ft.; width, 6 ft. 6 in.; centre section, 4 ft. by 2 ft. 6 in. and 2 ft. deep; soil margins, 18 in. wide and 9 in. deep. The marginal soil area is retained by a line of bricks and edged with natural stone



with some to spare. This allows for a 6 inch thickness of concrete on the bottom and sides. Before attempting to make this pond please realise that the hole must be dug 6 inches deeper and one foot longer and wider than the plan shows to allow for the space occupied by the concrete.

For simplicity this pond is shown as rectangular, but it would be preferable to use this basic rectangle and introduce irregularity into the outline. I would also prefer the centre section to be 2 ft. deep and the shelves 9 in. instead of 6 in. Shallow ponds are desirable where there are children, and ponds are highly undesirable where there are young children. After this warning with regard to the danger of all ponds to children it is perhaps as well to point out that 2 ft depth of water is needed in the winter for fish in all parts of the British Isles except the south and south-west, where 18 inches depth is sufficient.

The pond in the diagram is essentially saucer-shaped. With this shape it is possible to line the hole in the ground without the use of shuttering (boards) to keep the concrete in position. Shuttering is expensive both in time and money. Although many older instructions for pond-making recommend shuttering, I consider it unnecessary and undesirable. Sloping sides are far less susceptible to frost damage and far easier to produce.

Many people shun concrete for pond-making for fear of possible cracks developing, causing loss of water. Many cracks in concrete ponds can be avoided if these points are taken note of when constructing: a 6 in. thickness at the bottom should be aimed at. The concrete must be laid on fully consolidated ground. If this is in doubt bang in hard core with a sledge hammer before concreting. It is best to complete the laying of the concrete in one day as the joint between one day's work and the next may at a later date part company. The rough concrete should be faced within three days with a mixture of three parts of sand to one part of cement. I have never found it necessary to use water-proofing powder in this facing.

There are good pond-sealing products on the market for concrete ponds which are sound but merely cracked. Let us hope that you will not need to use them. In hot weather it is desirable to cover the fresh concrete with wet sacks; if it rains twelve hours after facing so much the better. Nature can be imitated here with a garden hose.

The pond should be filled completely seven days after being made. There is little doubt about the toxic qualities of the water when the newly made concrete pond is first filled. Any poor worm or frog that makes its way into the pond will be found dead. However, when this water is removed and the pond re-filled, after at least a week it will be found that most of the toxic lime has been removed and that the water in the pond is safe for plant life. After a further week with a fresh lot of water, I find that the pond is certainly safe for fish after it is filled a second time. It is as well to put only one fish in it at first and leave this a week or two before risking more. I cannot help feeling that the problem of the toxic effect of new concrete on fish is greatly exaggerated, although the first filling certainly results in very poisoned water.

If after introducing fish to a new concrete pond it is suspected that lime is coming from the cement, the

water can always be rendered non-toxic by draining and re-filling. Even leaving the garden hose running in the pond for a few hours and allowing it to overflow will dilute any pollution.

The submersible electric water pumps on the market are a great help in emptying ponds where there is no lower level to make siphoning over night with a garden hose possible. For the fish breeder and show exhibitor pumps are a great asset, as many hours can be saved catching fish by draining the pond and picking up your prize specimens when they are in shallow water.

However you make your pond great care must be taken to get the pond edges at the same height with a spirit level. When filled with water it immediately becomes apparent if the edges are not level. A high tide effect at one end of the pond and a low tide effect at the other is most undesirable, although certainly it does not look so bad with concrete as it does when a great expanse of blue plastic shows as a result.

### Fibre-glass and Plastic

Fibre-glass ponds are very good, but very expensive. They are frost-proof, virtually everlasting and completely trouble-free. They look large on the roof of a car, but small when in the ground. They are not as easy to install as a plastic sheet pond, as one has to dig a hole to fit the weird and wonderful shapes in which they are produced.

Plastic sheeting moulds itself to the shape of the hole you happen to dig. If the pond is properly made the plastic sheet does not show at all when the pond is established. It is cheaper than fibre-glass, although the most expensive plastic sheeting costs about the same as concrete, allowing for the extra labour involved with concrete.

All plastic ponds are proofed against damage by frosts. The colour of the plastic sheet is immaterial.

A very easy and effective way of concealing and protecting the plastic sheet around the pond edges is by covering the margins with soil and gravel. Overhanging edging stones are not effective in completely hiding the plastic, and overhanging stones have a habit of tipping in and puncturing the plastic sheet.

You have been given the pros and cons of concrete versus plastic sheeting. What is my preference? I am about to instal a fairly large decorative pond with a fountain as a permanent decorative feature near my main entrance gate. I have not yet made up my mind but I suspect that it will be just as easy and really permanent in ready-mixed concrete. It may, however, come to be made of Plastolene!

## Are You an Amateur Photographer?

**YOU will want to see the details of PETFISH MONTHLY'S Photographic Competition on page 59 of this issue.**

## AQUARIUM AMERICA THROUGH THE LOOKING GLASS—2



The author judges some fish entries at a show during his American tour



LARRY STIMSON took the photographs during Jim Kelly's tour

## Middle-

**L**IKE some monstrous gaping mouth the bonnet of the Plymouth car clanged shut. "Let's go!" said my friend Dave Stimson, and with a roar we sped north along Highway 65.

No alarm clock had been needed to rouse me that morning; even the larks were caught rubbing the sleep from their eyes, and as I sunk back into the comfort of the car seat even the witty conversation of my travelling companions, Dot and Larry, didn't stop the thrill of anticipation as I thought of where we were heading: we were about to blow into the "Windy City"—Chicago!

Mention that word to the average Englishman and he immediately conjures up visions of gangsters, booting whiskey and the 'roaring Twenties'. Sprawled between the Illinois prairie on the one hand and the vast expanse of Lake Michigan on the other, Chicago is typical of the American Middle West. Nestling as it does on the shores of the Lake, it wasn't the least bit what I had imagined, and the 'Indian summer' sunshine gave it more the appearance of a south-coast British seaside resort.

Approaching the outskirts we saw every indication that this was the largest rail centre in the world, mile after mile of stockyards and oil installations, but nearing the city proper these soon gave way to well laid-out gardens, broad highways and the hall mark of every



Chicago's Shedd Aquarium is situated on the shore of Lake Michigan. Take London's Albert Hall, fill it with fish tanks and there you have the Shedd... says the author

## Western Welcome

By Jim Kelly

successful U.S. town, the skyscraper, the latter forming a skyline that is famous the world over.

Our hosts for this three day visit were to be those familiar figures in Lakeside fishy circles, my namesake's 'the Kellys', Tom and Madelaine, and it was Tom who introduced me to the gathering of aquarists from surrounding clubs at my lecture that evening.

Introductions over, I swung into my 'spiel', hoping that my coarse Lancs. accent would be understood. As the slides flashed on to the screen I tried to tell my audience about fish-keeping in the Old World . . . Then it happened! The city of Chicago decided to show me from whence stemmed its title the Windy City.

On the journey up we had heard repeated tornado warnings on the radio, but as the weather seemed no different from that back home I hadn't paid much attention to them. But this was no north of England storm; the rain came down in sheets and the room was continually lit by lightning flashes, so brilliant that they outshone the slides; trying to make myself heard above the din, I wondered whether the ghosts of those old-time gangsters had taken to re-enacting their scenes of violence!

It all ceased just as quickly as it started and I knuckled down to the questions from my audience: 'What is the

most popular fish kept in Britain?', 'Are aquarium plants just as dear?', 'What do you mean by gravel?'—they came thick and fast. The curiosity to learn from others was amazing and it wasn't idle curiosity either but a genuine attempt to learn more about the hobby in Great Britain. Very much later we left them still discussing things and retired to have a last late look at the city in the arms of darkness.

My limited itinerary allowed me but two visits to aquatic shops in the city: Aquatic Gardens and John Rudack's well-known Guppy Room.

At the former we saw tanks full of fishes that would have made the British hobbyist drool—red devils, discus fish the size of saucers, and, oh, those marine species!

First to catch the eye on entering most stores is the vast array of equipment on sale: pumps powerful enough to blow the roof off any fish house and at prices by our standards that would blow the cobwebs out of your wallet.

Stainless steel and all-glass tanks are the order of the day, and though some shops do have the tier upon tier display, most prefer the step-down system of placing their tanks; come to think of it, I don't remember seeing any of our familiar angle-iron tanks anywhere.

Prices were high but the stainless-steel tanks were still cheaper than in this country, and to offset the high prices I learned that wages were about three times the national average for Britain.

Here I was introduced to Gro-Lux lighting; this type of fluorescent tube imparts a 'redness' to the tank and its occupants that has to be seen to be believed.

Archer Avenue is the home of John Rudack's 'House of Tropicals'. The name Archer is appropriate, because his fishes have scored him many a 'bull' in shows throughout the States. A keen hobbyist, John Rudack was prominent in the early days of the American Guppy Association and in 1964 received the Journal of the Year Award from the International Federation.

Owing to structural alterations to the store, John's Guppy Room wasn't fully open, but the tanks (and there were many) that I did see were chockful of large guppies. A great believer in absolutely clear water, John has external box filters as well as sub-gravel filters in the tanks, and the job of maintaining all these was being ably carried out as we made our tour.

A speciality of the House is adult brine shrimps, and these John sells to the trade alive or frozen. Having tried unsuccessfully on more than one occasion myself to grow on these shrimps I was interested in the water



Talks about fish with Chas and Nina McAdams of Ohio, with whom the author stayed, went on into the small hours



(Left) Place ribbons awarded at U.S. fish shows are seen on the wall behind Indianapolis club member Miss Andy Knepper.

used in the hatchery; I found it differed little from the normal saline solution used to hatch brine shrimp eggs. One fact that might have some bearing on the problem was that Chicago mains water was heavily chlorinated; so much so that when you ran a tap you couldn't help detect its unmistakable odour!

It isn't every day that one gets the chance to win the title 'Hobbyist of the Year', but that is what my next host had received. Harry Matson and his charming wife Charlotte live about 50 miles north of the city and it was but a short run alongside the Lake on the Tri-State Tollway to their place.

I am used to garden set-ups, so the two sheds in which Harry houses his hobby were familiar to me, but generally most hobbyists in the U.S.A. use the basement of their homes and outdoor hatcheries are not the rule.

### 'Discus by the Bucket'

It was quickly made obvious how the title he has won was gained: on all sides tanks, each of approximately ten gallons capacity, were bursting at the seams with fish bred on the premises. Discus by the bucketful and guppies galore!

Because very little had appeared in print on spawning discus when Harry started, most of his knowledge was from the do-it-yourself trial-and-error school. For those readers wishing to try their hand at *Symphysodon*, here is the procedure that Harry uses. He bends strips of stainless steel, each about two inches wide by a foot long, into a U shape and places the strip in the spawning set-up with the adult pair of fish.

On these unusual spawning beds they lay their eggs and he told me he gets less incidence of eggs growing fungus than when he used more orthodox methods with pieces of slate, glass or even plants.

All, or at least nearly all, of the tanks were devoid of both plants and compost. Each contained a filter of his own design packed with charcoal and wool; these he changes regularly and by the look of the water it was clear enough to drink!

To conserve space all the tanks are above each other

(Below) A view of tanks in Chas McDams' fish house. Aquaria are mostly the 24 inch size, and water is kept crystal clear.



in tiers on wooden staging and placed with the 'square' end facing inwards. It was like walking down an avenue of activated skyscrapers.

As in the travel-film endings of old, we reluctantly said farewell to the Matsons, but not before another 'fanatic' had dropped in for a chat on fish in the person of Fred Peroni.

Sunday morning arrived all too quickly and we made a visit to Chicago's Shedd Aquarium. Take London's Albert Hall, fill it with fish tanks and there you have the Shedd in a nutshell; its catalogue alone runs to over two hundred pages. Thanks to the courtesy of the curator Bill Braker, we were given V.I.P. treatment and shown all over the building.

### Chicago's Shedd Aquarium

Most of the tank maintenance is automatic, and walking behind the scenes was like a trip through a factory making precision instruments; everything was so spacious and clean, and considering the great age of the place it was remarkably well kept.

The public side of the exhibition disappointed me. Fish there were and in variety but the tanks themselves were just like large, square, concrete boxes and in my view didn't show the occupants to full advantage. We were shown an experiment in interior tank decoration in the penguin pool; here the sides of the tank had been landscaped (if you forgive the pun), with imitation rockwork fashioned from fibre glass. The penguins, at least, seemed to appreciate the brighter surroundings.

One complete room was devoted to the tropical

species more familiar in our home aquaria: each two foot tank was fully furnished and the whole was set in Oriental surroundings.

If you let your eye travel south-east from Chicago on the map you will spy the State of Ohio. This is typical farming country and to the traveller its acres and acres of wheat look like the sea itself as the breeze ruffles the grain and creates wave-like patterns.

With the Allegheny Mountains on the one side and the prairie on the other, we headed for Dayton and the home of Charles McAdams, or, as his friends affectionately call him, 'Chuck'. Active hobbyist, board member, judge and dealer are just a few of his many activities in the tropical fish hobby, but it was his guppies that I wished to see on his farm 'County Line'.

I had met Chas and his wife Nina at the banquet in Indianapolis and having corresponded with them from England for some time before my visit I felt I was visiting the home of old friends; their welcome showed that I was.

Utilising what had been poultry houses, Chas has some two hundred tanks: although space-heated, the room didn't have that oppressiveness so characteristic of central heating and proved to me that good fish rooms could be made out of outbuildings without going to too much expense.

Along the rafters of the building were displayed the many wonderful trophies he had won, and when I inquired what the prizes were depicting a large bear, Chas told me they were from the International Show in Berlin, Germany, a show he rarely misses.

By this time my travels had dulled my brain as to what constituted a 'large' fish but here were some even larger! How does he do it? 'Nothing that good stock and good feeding from birth won't achieve for anyone', was his modest reply. 'Plus a suitable clean environment', he added. To add emphasis to that last remark

a large external power filter gave a pleasant gurgle.

Like so many husband and wife teams in the pet fish hobby, Nina runs the store from another building close by, and during my visit, people had been coming and going with purchases. Here was another surprising thing I learned about the U.S. Here it was Sunday afternoon, and the shop was going full blast as if it were the middle of the week. One store I visited advertised that they were open from 9 a.m. to 9 p.m. daily, excepting Sunday (this was their early closing day—when they closed at 7 p.m.). Small wonder that tropical fish-keeping is America's second largest hobby!

So as to be able to attend my lecture in Big I, Chas had invited Paul Hahnel to stay at his home. Here is a man dedicated to the hobby and one with whom any aquarist could cheerfully talk on fish matters well into the wee hours—as we very nearly proved.

On the subject of fish going off their food, Chas has this tip to offer: try mixing a few drops of anise oil in with almost any dried fish food; this soon restores their appetite, a fact I have since verified here in Britain.

In the huge task of looking after all these fishes they are helped by their son Paul and a large family backing; it seems that everything about the McAdams is big, from their generosity to the width of their welcoming smiles. At night everyone gathered in the farmhouse and over gallons of coffee we discussed the hobby on both sides of the Atlantic.

Looking back, perhaps you may think that I visited only outstanding hobbyists and not the run-of-the-mill fish-keeper. That they were outstanding I cannot deny, but they were typical of the general fish-keeper at least as far as aquarium set-up and methods were concerned.

Next month: We meet 'Mr. Killiefish', judge 'Best in Show' at a shopping centre and the 'Seven Seas' gets a new assistant!

## British Marines in the Window

A GLANCE in the window of Stirling Aquarium Installations of Hammersmith, London, might encourage you to try keeping our native marine creatures. Customers of Mr Frank Sanders returning from Brighton brought him specimens which have survived, so far, for a year. These include what is thought to be a mullet, a shore-dab, about six blennies and an edible crab.

Equipment is very ordinary—an unadapted 44 in. by 11 in. by 11 in. single-iron framed tank originally used for freshwater fishes, an internal filter costing 5s, some sharp sand and a few pieces of rock.

Sea water was obtained, and this has attacked the top rail of the tank.

Pieces of rust falling into the water have done no harm to the occupants, however. No topping up has been done during the autumn and winter. During the warmer part of the year loss by evaporation was made up with tap water.

Temperatures have varied between 46°F and a little over 70°F (8-22°C). Daylight is intense enough to cause the tank's glass sides to become obscured with a thick curtain of dark green algae, which is occasionally detached with a razor-blade.

Frank doubts the wisdom of including crabs, which are aggressive predators and, in such a confined space, attempts to keep two or more together always resulted in only one

surviving. Sand-eels also became their victims. The only other failure was an attempt to include large, six-inch anemones thought to be from deep water off the Cornish coast. These refused to feed.

Smaller anemones—which are fed with fragments of food offered on the point of a knitting-needle—have bred in the tank.

Twice weekly feeding is with tubifex worms supplemented in warm weather with small pieces of raw fish (bought for the cat!).

Mr Sanders' advice is to avoid large specimens: 'Get small stuff and let it grow'.

FRANK STONE

A course  
for the  
would-be  
breeder of  
tropicals

## Part I

# The Importance of the Right Water

*THIS is the first of a series of articles I have been invited to write on tropical fish. It would be impossible to cover all the species that are now kept in aquaria, but I hope to split them into groups so that each article will cover a number of species that will thrive under similar conditions, and breed in like circumstances.*

*The first few articles will cover the non-exacting and therefore easier to keep and breed species, going on to the slightly less easy ones, then the generally regarded more difficult fishes, and finally perhaps some of those which will require special care and attention.*

**P**RESUMING the aquarist has tanks, heaters, thermostats and, where necessary, light-hoods, sand, rocks, and a variety of healthy plants, the next and most important factor is water. Too many aquarists regard water as something required for their fishes to swim about in. This is far from accurate.

In Nature all the water on earth is provided by rain; occasionally this falls as hail or snow. During its fall from the skies rain will pick up impurities in the atmosphere, so in very industrial districts it would pay the aquarist to get water from less smoky areas. In the forest regions, where most of the tropical fishes come from, the rainwater is probably as pure as it can ever be. It has always been my endeavour to keep as close as possible to Nature, and this is surely a good reason to fill aquaria with clean rainwater.

On reaching the ground rain percolates through the soil, and again picks up various minerals on its course to underground springs, ditches and hollows which form rivers and ponds. In chalky areas water will pick up calcium, and is likely to be hard and alkaline; in peaty areas, bogs and tropical swamps where leaves and other vegetation fall and rot down, the water is likely to be soft and acid. Thus in Nature something like 75% of all the species come from regions where the water is soft and acid, 20% from neutral areas, where the water is neither very hard nor very soft, and only about 5% from places where the water is hard and alkaline.

Most tap water in this country is hard and alkaline, so it is not likely to suit the majority of fishes an aquarist keeps in a community tank. Whilst on the subject of tap water, a grave warning must be given about copper piping and copper cylinders. In many new buildings this

By **D. B. McINERNY**  
(McLynn's Aquarium, Surrey)



metal is now generally used, and few aquarists realise how deadly it is to fish. Recently I have heard from many fish-keepers that their fishes have suddenly started dying; their tanks look healthy and no disease is apparent, but deaths follow one another rapidly. If a tank is newly set up with water that has stood for some time in a copper cylinder or pipes, deaths can commence a few hours later.

When the taps have been run for a long time before the tank is filled the amount of copper present is greatly reduced but, if when making up for evaporation losses the tank is always topped up with water containing copper salts, the build-up eventually reaches a toxic concentration, and deaths begin to occur. So many people have told me that everything in their aquaria has been fine for months, and asked why now should these fatalities suddenly manifest themselves? I advise an immediate change of water from a copper-free source, and though the fish which have reached their limit of copper poisoning will die, those still below this level will make a quick recovery.

Any aquarist not certain about his tap water supply should make an inspection immediately, and if pipes and cylinder are of copper he would be wise to change most of the water in his tank for rainwater. In spite of the fact that rainwater is suitable for most fishes, it must not be stored in a copper or galvanised tank. Zinc, as well as copper, is a poisonous metal. Rainwater from an old iron bath, wooden butt, china sink, or enamel bucket is safer.

If an aquarist intends to become a good breeder of many species of tropical fish he will have to have at least three types of water: (1) alkaline and hardish for the few species that require this; (2) a good deal of clean rainwater that is slightly acid and on the soft side. This will suit the breeding habits of a great number of species. Finally (3,) some very soft, pretty acid peaty water, for

the supposedly difficult and more exacting species.

As it is unlikely that the average aquarist can go out and collect nearby these three types of water, he will have to start with rainwater and either harden or soften it himself. As stated previously, the majority of tap water is on the hard side, so a small quantity of this water can be obtained easily enough in most districts. Rainwater may not be easy for some aquarists to obtain; those living in flats or industrial areas may have to travel a few miles into the country to collect this from a friend's house. If unable to do this, then it would be advisable for the aquarist to breed only the species requiring the conditions he can provide. But to those who can and are willing to make a determined effort to secure the right type of water the breeding field is much wider.

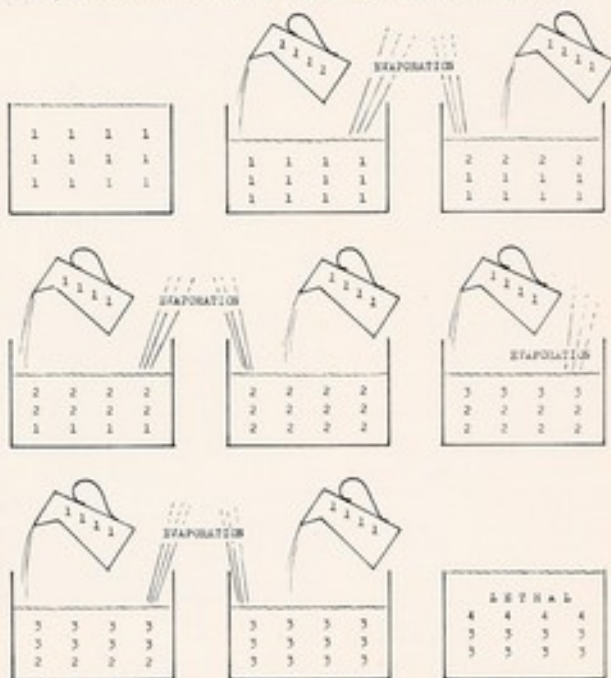
Soft peaty water is obtainable only in a few districts. It can be made from rainwater, but this is going to take weeks, or even months, to be ready for use. For the breeding of neons, cardinals and *Notobranchius*, therefore, such aquarists are advised to make the preparations now, and by the time these articles reach that stage they should have the water available. Since fish have been on earth much longer than man, they have adapted themselves to the conditions prevailing in their natural habitat.

For instance, eggs or sperms that have never had to contend with the salts found in hard water are not equipped to withstand these, so it is expecting too much to imagine that when expelled into hard water they can survive. Even though fishes can slowly adapt themselves to slightly different conditions, the eggs or sperms certainly will not. If you are going to become a good breeder of these types of fishes sooner or later you will have to have soft peaty water, so why not prepare now? Even though you may not initially have great success you will gain experience, and each attempt will get you a little nearer the ultimate goal.

We will now deal with the making of this soft peaty water. Procure an old iron or enamel bath, enamel sinks or even use a polythene pool or buckets; anything, in fact, that will hold rainwater for a long time, and which is not contaminated by copper, zinc or other poisonous metal. Fill all the containers you can muster with pure clean rainwater. Buy from your local nurseryman or corn-chandler some peat (usually sold in bags or bales). You will require enough broken-up peat to fill the ordinary 2-gallon bucket for each 10 gallons of rainwater. Throw the broken-up peat on to the rainwater and cover with sheets of glass. Over this place some roofing felt or black polythene to exclude light, thus preventing the growth of

**How concentration of a poisonous metal can build up over a period of time**

Suppose that the copper in the tap water is 1 part per million. This is represented in the aquarium in the first diagram by the numeral 1. The concentration in the tank is represented by twelve numerals in three rows. When the water evaporates, the copper remains behind. Each time one third of the water is lost by evaporation and replaced by tap water containing 1 p.p.m. of copper, the copper content increases (in the diagrams one row of numerals is increased). When the concentration in the tank exceeds 3 p.p.m., it is likely to be fatal to fishes.



algae. Each week stir and break up any lumps of floating peat. Eventually this will all sink and the water, although clear, will be a deep red-brown. Before it is usable all the peat must have become completely waterlogged, and remain so for at least one month after this.

When using any of this water do not dip in a jug or bucket. This will stir up the peat and cloud the water. Use a siphon tube and draw the water gently off. This is then warmed up to 80°F (26-27°C) and poured into the clean bare breeding tank. As soon as the required peat water has been drawn off, top up this store with the same quantity of rainwater. The original rainwater

becomes saturated with humic acid, but when some is drawn off and the remainder is topped up with rainwater saturation point is lowered, and more humic acid will be drawn out of the peat. If not used too frequently, the topping-up process may be continued for a year before the peat is all used up. Of course, the larger the container you have the more peat it will hold, and the longer it will last before renewal becomes necessary.

This natural process must not be hurried. Never place the peat in a bag or pillow-slip and boil it. This boils out the humic acid to such a strength that it will kill most fishes within a few hours.

## Lake Water Cress

By C. D. ROE

### *Armoracia aquatica* (Eaton) Weigand

A plant for pond or tank

THIS is a native of the North American Continent from Quebec to Minnesota southwards to Florida and Texas. Commonly called lake water cress, it is quite a useful plant for both warm and coldwater aquaria. The lake watercress is completely hardy in Great Britain. In the young plants the leaves are simple but as the plant grows and develops they become more divided. Eventually, the plant which at first is a squat bushy growth, develops an ascending stem, often with leaves so finely divided that it resembles a giant myriophyllum. If this stem should ascend above the water surface the leaves again become simple and rounded and a head of small white flowers is produced.

There has been a certain amount of confusion in books between this plant and the common water cress, largely because of synonyms under which *Armoracia aquatica* has been known; the names *Nasturtium lacustre* and *Rorippa aquatica* have been given to this plant, whereas *Rorippa nasturtium* and *Rorippa aquatica* are properly names of the common water cress.

Lake water cress is an exceedingly easy plant to propagate. All that needs to be done is to cut the stem into pieces and plant these either under bog conditions or fully submerged, when small plants will develop in the apices of each leaf. Similarly, leaves or pieces of leaves will root and eventually produce tiny plants. The quickest method



of all is to pinch the top off the ascending stem, when plants will develop quite soon in the apices of some of the leaves. Plants should be separated from the parent plant when  $1\frac{1}{2}$  to 2 inches in size.



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AT a recent meeting of the **EAST LONDON AQUARISTS AND PONDKEEPERS ASSOCIATION** (meetings first and third Fridays in each month at The Ripple School, Ripple Road, Barking, Essex) an interesting talk by Mr J. V. Morrice, F.B.A.S. Lecturer and Judge, described the various criteria that formed the basis of judging fish and aquaria. A number of pertinent questions were put and a very lively debate developed among the many enthusiasts who attended the meeting, in spite of bad weather. It was agreed that the meeting had been both instructive and entertaining and should result in further successes for the club when competing in shows.

**MEMBERS of WALTHAMSTOW & D. A.S.** have an interesting summer ahead of them if they take part in all the activities organised by the Officers of their Club. A visit to Queensborough Fisheries in April is to be followed on 7th May by one to Shirley Aquatics Ltd. and there will be a river trip for members and their families on 22nd May.

**CANTERBURY & D. A.S.** are fortunate in having ample accommodation for meetings, one of the two rooms at their disposal having running water and plenty of bench space. At a recent meeting, six new members joined over 30 others to hear a lecture on the various aspects of entering fish in shows.

**THREE members of the NOTTINGHAM & D. A.S.** gave their fellow club members a very entertaining evening recently. Mr E. Smith contributed an hilarious ten minutes with an off-the-cuff talk on his experiences in obtaining, breeding and selling various fish. Mr G. Bulleymont spoke of the unexpected spawning of a pair of *A. ramirezi*, and Mr N. Goodliffe explained the uses of a microscope in the identification of various fish ailments and produced excellent drawings to demonstrate the appearance of these diseases under the microscope. At the table show that followed, results

were: Class 1 (dwarf cichlids): 1, Mr K. Riley (*P. arribensis*, 79 pts); 2, Mrs I. Bulleymont (*A. reitzigi*, 76 pts); 3, Mr G. Bulleymont (*A. agassisi*, 71 pts). Class 2 (large cichlids): 1, Mr K. Riley (acara, 76 pts); 2, Mr K. Riley (firemouth, 72 pts); 3, Mr K. Green (angel, 68 pts); 4, Master J. Goodliffe (acara, 66 pts). The judge was Mr B. Inman.

AT the annual general meeting of **UXBRIDGE & D. A.S.** the chairman Mr H. Moore reported a very successful year. Membership had increased to over 50 and club activities which had included lectures on

### International Show in the North

EXCITING news is released this month of an International Tropical Fish Exhibition in Manchester on 11-12th June (see 'Dates for Your Diary' for full details). This is a joint venture of the **FANCY GUPPY ASSOCIATION** and the **BRITISH KILLIFISH ASSOCIATION**, and entries and visitors from the numerous overseas members of these associations are expected. The Exhibition is to be supported by trade stands and other exhibits, and facilities at the venue include refreshment rooms, bar, a large hall and a cinema at which films will be shown through the weekend.

plants, fish and the American brine shrimp industry, had been enthusiastically supported. The highlights of the year had been the Open Show with an entry of over 300 fish and the furnished aquarium display. A service greatly appreciated by members is the Club library of books (on loan at 3d a fortnight) covering all aspects of tropical fish-keeping. At the first table show of the year in March 32 fish were on display. Jock Stewart judged the competition and praised the quality of the fish. After the judging and prize-giving members asked the judge many questions and a lively debate followed. Prize winners in the five classes shown were: Class A (catfish and loaches): 1, Mr Hickman (*C. paleatus*, 85 pts); 2, Mr Brunton (*C. paleatus*, 83½ pts); 3, Mr Parry (*C. julii*, 83 pts).

Class B (danzios, rasboras and white cloud mountain minnows): 1, Mrs Peters (scissortail, 80 pts); 2, Mr Bull (zebra, 79½ pts). Class C (mollies): 1, Mr D. Tovell (black mollie, 81 pts). Class D (a.v. guppies): 1, Mr Brunton (81 pts). Class E (a.v. novice): 1, Mr Carter (*Labo bicolor*, 84½ pts); 2, Mr Stapleton (*P. fasciatus*, 84 pts); 3, Mr Parry (*C. aeneus*, 83½ pts); 4, Mrs Bull (*P. assectens*, 83 pts). Meetings are on alternate Wednesdays at The Parish Rooms, Hillingdon Heath, Uxbridge at 7.30 p.m.

A GROUP of local enthusiasts, under the auspices of the **ALFRETON Arts Association**, have recently formed an Aquarist Society, meetings of which are held at the Arts Centre. The objects of the Society are to promote interest in the study of aquatic life in general by exchange of ideas between members and arranging of lectures by leading experts and also to organise shows for the benefit of local charities. Interested fish-keepers should contact Mr M. J. Staines, 52 Parks Avenue, South Wingfield, Derby.

ANOTHER newly formed society on the South Coast at **EASTBOURNE**, has prepared a full programme for its fortnightly meetings, with talks on fish-keeping, breeding and aquarium management, interspersed with fish table shows. Meetings are held at Crown Inn, Old Town, Eastbourne and prospective new members are asked to contact the secretary, Mr Colin George, 6 Hurst Road, Eastbourne.

THE monthly Bulletin of the **AIREBOROUGH & D. A.S.**, editor Mr R. E. Hampson, reflects the enthusiasm of its club membership. A new cover, extra pages and the success of its 'Corresponding Membership' scheme, whereby fish-keepers who cannot attend meetings can, on payment of only a portion of the full subscription rate, receive issues of the monthly Bulletin, Year Book and even enter for suitable competitions, all indicate growing interest in the Society's affairs.

**RUGBY & D. A.S.** have a full programme of club and inter-society eliminator shows this year. They plan 14 table shows, including six new 'Fish of the Month' shows. At a recent meeting the personal experi-

ences in breeding, feeding and rearing young fry related by club members Mr Edden (guppies bred to standards laid down by the F.G.B.S.), Miss Shaw (*Corydoras schultzei*), Mr Spencer (cichlids) and Mr Fox (angels) provided a wealth of information for fellow members.

At a meeting in February Mr K. Barraclough of Bedford gave a very interesting talk to **KEIGHLEY & D. A.S.** members on the commercial side of tropical fish breeding. Show winners at this meeting were: Class A: 1, Mr A. White; 2, Mr A. Campbell; 3, Mr D. Connolly; 4, Mr A. Campbell. A.O.V.: 1, Mr A. Smith; 2, Mr A. Campbell; 3, Mr R. Eddison; 4, Mr A. White. Junior A.O.V.: 1 and 2, A. Smith; 3 and 4, R. Price.



Worcester A.S. members (left to right) Messrs A. Beecroft, H. Coley, D. Spillbury, T. Bosworth, K. Heeming and L. Brock with giant loaf

**MEMBERS** of **WORCESTER A.S.** recently celebrated the first anniversary of their formation with a social evening at the Duke of York, Angel Place, Worcester, at which pride of place was given to a six-foot loaf of bread specially baked for the occasion. Meetings are held every other Thursday at the Labour Club, New Street, at 8.0 p.m. and in twelve months they have progressed from a small founding group to over 50 members. Meetings include film slide shows, lectures and table shows between members and with other clubs. It is hoped to increase the coldwater section during the next few months. Further details will be supplied by secretary Mr P. Price, 64 Ronkwood Hill, Worcester and prospective new members will be made most welcome.

OVER 70 people attended the meeting of the **NORTH WEST LONDON GROUP OF AQUARISTS SOCIETIES** held at the Hampstead Aquatic Society's address, 35, Steeles Road, Hampstead. The Group consists of five clubs who hold one meeting at every member club's meeting place each year. While the judging took place members and friends were given an interesting slide show by Mr H. Hartridge, a keen Hampstead A.S. member. Refreshments were kindly provided by Mrs Pye, wife of Hampstead's secretary. All classes were very well supported. Judge was Mr A. Jeasopp, chairman of the F.B.A.S., who presented the prizes. Prize winners: A.V. angels: 1, Mr F. Caffell, Independent A.S. (ordinary angel, 79 pts); 2, Mr F. Caffell (ordinary

angel, 78 pts); 3, Mr T. Glass, Willesden A.S. (black angel, 77 pts); 4, Mr T. Glass (black angel, 76 pts). A.V. fighters: 1, Mr J. E. Chapman, Independent A.S. (red male, 81 pts); 2, Mr J. E. Chapman (red male, 80 pts); 3, Mr C. Buckland, Riverside A.S. (blue male, 78 pts); 4, Mr G. Aylard, Riverside A.S. (female, 77 pts). A.O.V. livebearers: 1, Mr S. Harman, Riverside A.S. (blue limia, 80 pts); 2, Mr F. Tomkins, Independent A.S. (*Limnia vittata*, 79 pts); 3, Mr F. Caffell, Independent A.S. (*L. vittata*, 78 pts); 4, Mr T. Glass, Willesden A.S. (*L. vittata*, 77 pts). A.V. Danios, rasboras, white cloud mountain minnows: 1, Mr Biggs, Riverside A.S. (*Rasbora jacobsonii*, 81 pts); Mr H. White, Hendon A.S. (*Rasbora elegans*, 79 pts); 3, Mr R. Biggs, Riverside A.S. (*Rasbora borapetensis*, 78 pts); 4, Mr D. Benole, Independent A.S. (zebra danio, 77 pts). Riverside A.S. won the annual trophy of the

N.W.L.G.A.S. with total points of 130. Best fish in show was also won by a Riverside member, Mr Biggs with his *Rasbora jacobsonii*.

**MAIN** event at **ILFORD & D. A. & P.S.** monthly meeting in February was a criss-cross quiz between members and their friends. Questions were prepared by Mr Brill and Mr and Mrs Ruth. Anyone interested in fish-keeping and water life can be sure of a friendly welcome at the monthly meetings held at St. Lawrence's Church Hall, Donington Avenue, Barkingside. Further details are available from secretary Mr R. Ruth, 13 Dunkeld Road, Goodmayes, Essex.

**THE BARRY A.S.** has now held the second of its series of film slide shows. The slides came from Brentwood, Essex and were on aquarium plants. Mr D. Johns read the commentary while Mr I. Taylor worked the projector. While the slides were shown, Mr D. Wigg of Llantwit Major judged the table show with the assistance of Mr P. Battisea of Cardiff. Results: livebearer: 1, F. Denton (79 pts); 2, Mr Tippings (73 pts); 3, G. Robert (73 pts). Egg-layer: 1, P. Harris (78 pts); 2, Master Phipps (74 pts); 3, Mr Luxton (69 pts); 4, Master Phipps (61 pts). This was the first table show of the year with three to follow. The points will be totalled at the end of the year to see who will hold 'The Points Shield' for one year. Last year's winner was Mr F. Denton.

**MEMBERS** of **CORBY & D. A.S.** had a talk on an unexpected subject at their monthly gathering at the Nag's Head last month. Mr Frank Vicker, who was to have given an address on plants and the setting up of tanks, was prevented from attending and the gap was filled at the last minute by Mr Geoffrey Meese, B.Sc., who dealt with some of the lesser forms of marine life. A bring-and-buy sale for the club funds raised just over £4 and a table show of any variety tropical and coldwater fish was held; results: 1, T. Kelly (fantail goldfish); 2, B. Deans (dwarf gourami) and D. Haig (neon tetra); 3, M. Brown (emperor tetra). A junior plant recognition test was won by D. Coles and this success also brought him the junior shield.

A FULL programme of meetings is

planned for the coming months for the **SOUTHEND, LEIGH & D. A.S.** Held on the first and third Tuesdays in the month at the Liberal Hall, Clarence Road, Southend, these will include talks on breeding barbs, on catfish, fry rearing etc., with slide shows on cichlids and marine tropical fish, advice from visiting speakers and table and inter-club shows. Recently an illustrated lecture on characins was given by the president, Mr A. J. Mason, and the secretary, Mr M. Willis. At another meeting Mr S. C. Halsey gave a talk on coldwater fishes. Besides being an aquarist, Mr Halsey is also a keen angler and so was able to cover fishes that are native to this country as well as the varieties of goldfish. At a table show for cichlids held on the same evening, results were: 1, Mr A. J. Mason (*A. ramirezi*); 2, Mr M. J. Willis (blue acara); 3, Mr J. Baron (*A. apassiri*). Details of membership etc. can be obtained from secretary Mr M. J. Willis, 17 Arundel Gardens, Westcliff-on-Sea.

A NEW society is to be formed with headquarters at the Raven Hotel, Cobridge, Stoke-on-Trent. The aim of the group will be to study breeding fish, biology, water plant life, administration of an aquarium and exhibition work. Interested aquarists should get in touch with the Secretary, c/o The Raven Hotel.

AN outing to the south coast for the collection of specimens is planned for members of the **MARINE STUDY AQUATIC SOCIETY** on 1st May. Non-members can join in (own transport required) and further particulars are available from Mr A. S. Metzger, 112 Brooke Drive, London, S.E.11. Two members of the Society's Committee plan to travel to Holland at Easter to establish contact with Dutch aquarists interested in marine aquaria and to see fish houses and breeders' establishments in that country. Two new members of the Committee are Miss P. Blackwood (assistant secretary/treasurer) and Mr A. S. Metzger (public relations officer). Interesting information about the coelacanth (the Society's symbol fish) with other notes and articles, was given in the March issue (number 3) of the Official Journal of the Marine Study Aquatic Society, which is free to members and available to non-members by subscription (details

from the secretary, Mr G. H. Jennings, 2 Gatcombe Road, Tufnell Park, London, N.19).

Mr J. V. Morrice is chairman of the Society and not vice-chairman as indicated in our caption to his photograph in our April issue.

WHEN the **MEDWAY A.S.** were hosts to the Erith, Sittingbourne and Canterbury clubs recently at their new meeting place (Danecourt School, Watling Street, Gillingham), a table show was held, the classes being for Labyrinths, Cichlids, Livebearers and Sharks and Loaches. The classes were very well supported,

most having twenty or more fishes. All the fishes benched were of a high standard. Special awards are presented by Medway for any fish obtaining over 85 pts. and three of these awards were presented. The best fish in the whole show was a black shark, owned by a Medway member. Erith was the highest pointed society of the evening followed closely by Medway and then Sittingbourne. The F.B.A.S. judge was Mr G. H. Jennings. While the judging was taking place in an annexe to the main hall, the club members and their friends were shown several very interesting films, one of which

### Championship Classes Under Discussion



ALLOCATION of Championship Classes to open shows of affiliated societies in competition for F.B.A.S. Open Show Trophies caused lively discussion among the 23 delegates at the General Assembly of the **Federation of British Aquatic Societies** held in London on 5th March. Some expressed the view that as the popularity of fish show classes with exhibitors varies so widely, as shown for example by the large number of fish entered in barb classes compared with classes for loaches, it would be impracticable to allocate these classes to club shows regionally even if this were done on a rota basis. A proposal by Mr Frank Stone (Hampstead A.S.) that the Council decision about the exact class to be allocated for any Open Show Trophy should be made in consultation with the particular club concerned was accepted by the meeting

Mr J. Stillwell (Portsmouth A.S.) puts a point to F.B.A.S. chairman Mr A. G. Jessop (right) and secretary Mr K. J. A. Pyle (centre) during the F.B.A.S. Assembly

for delegates to take back to their societies and to be voted upon at the next F.B.A.S. Assembly in June.

A motion read at the last meeting, that 'no "B Class" Judges shall be upgraded to "A" status in both Goldfish Varieties and Coldwater, and in Tropical, Classes', was voted upon after discussion and defeated. Election of a treasurer was postponed because of lack of candidates. The vacant place for one Council member was filled by Mr G. Jennings, voted in by a single vote majority. A table show of egg-laying toothcarps staged during the Assembly was judged by Mr F. Tomkins (Independent A.S.).

### Three Counties Group

THE meeting held at Didcot on the 16th March took the form of a social evening and an inter-club table show between Reading, Basingstoke, Bracknell and Didcot, the clubs forming the **THREE COUNTIES GROUP**.

Each club entered six fish of any variety in square jars. The fish were of excellent quality and the species were also well varied.

Individual prize-winners were: 1, Mr P. Merrit, Reading (*H.*

*rubristigma*, 89 pts); 2, Mr L. Ludgrove, Basingstoke (*P. kribensis*, 88 pts); Mr R. Keeping, Basingstoke (*A. ramirezi*, 86½ pts); Mr P. Merritt Reading (catfish, 86 pts).

The host club provided refreshments on a lavish scale and the judge for the evening was Mr J. V. Moerice of Hendon & D. A.S., whose time for judging the entries was very restricted owing to the earliness of the last train back to London. Overall results were: 1, Reading (99½ pts); 2, Didcot (72 pts); 3, Basingstoke (71 pts); 4, Bracknell (57½ pts).

was on marine life. After the prizes were presented to the winners the judge commented on the high quality of most of the exhibits on the bench.

AT a meeting in February of **HENDON A.S.** a slide show/lecture was given by one of the members of the new Marine Study Group, on how to set up and maintain a cold-water marine aquarium. Much enthusiasm was shown for this subject by the audience, and an interesting discussion followed on differences of opinion about the keeping of marine aquaria.

CHANGE of time and meeting place for **NEWPORT A.S.**: from the April meeting, the Society will meet on the first Tuesday of each month at the R.A.O.B. Club, Stow Hill, Newport, at 7.30 p.m. Officials of the Society during 1966 are: president, Ralph Harris; chairman, Jack Burgwin; vice-chairman and magazine editor, Terry Wall; secretary, Mrs Anne Salmon (Helvellyn, 33 Glanmor Park Avenue, Newport, Mon., telephone 73588); treasurer, Ivor Phillips; show secretary, Michael Parry (45, Western Drive, Gabalfa, Cardiff, telephone 66573); junior representative, Master Paul Williams, and Messrs Leo Bannerman and F. Glyn James.

AT the **THORNE A.S.** meeting in March a lecture was given by Mr E. Atkins of Derby on barbs' habits and breeding and he also judged a table show for best pairs: 1, H. Candow, dwarf gourami; 2, A. Powell, *A. ramirezi*; 3, J. Brown, tiger barb. Mr J. Brown presided.

AT the annual meeting of the **DERWENT A.S.** Mr S. Yeomans, chairman, was re-elected. Mr H. P.

Finch, secretary for several years, did not seek re-election for health reasons, and was succeeded by Mr A. Addey, who also retained the office of show secretary. Mr Finch, who was secretary of the club in the late 1940s and 1950s was thanked for his services by the chairman, seconded by the treasurer (Mr T. Swinburne). He is a life member of the club. Mr Swinburne and Mr W. Gwynn were re-elected treasurer and librarian respectively.

THE **EAST DULWICH A.S.** held their Annual Social and Award Night on 26th March at their headquarters, 110A Lordship Lane, S.E.22. Mr A. Jessopp, F.B.A.S. judge, was present accompanied by Mrs Jessopp and their daughter. During the interval the following awards were presented by Mr Jessopp: plaques: Mr P. Andrews (a.o.v. pairs); Mr H. Aves (labyrinths); Mr P. Bowerman (barbs); Mrs N. Castle (characins); Mr L. Cole (catfishes); Mr C. Felerman (livebearers); Mr A. Gale (toothcarps); Mr A. Rose (a.o.v.); Mr R. Salmon (fighters); Mr S. Sears (cichlids); Mr S. Sears (broods). Plant cup: Mr A. Gale; junior cup: E. Bolingbroke; best fish of the year cup: Mr A. Rose. For the first time the junior members competed for the junior cup, kindly presented to the Club by Mrs N. Castle, who was until recently chairman for the current year. This will be an annual competition and the Society would like to see many more young people taking part in this kind of 'battle'. After the awards had been presented, the wives of the officers and Mrs Jessopp were presented with bouquets by the small daughter of Mrs and Mrs R. Salmon. Thanks were given to the family friends of the acting chairman

for their hard work in preparing and setting out the refreshments, which were much enjoyed by all present. This annual 'get together' is a little appreciation from the Club members to the wives, who have much of the sacrifice connected with fish-keeping but very little of the glory.

**NORTH LONDON A.S.** has now been re-formed. Past members and newcomers to the hobby are invited to join. Further details can be obtained from Mr R. F. Chitty, 24 Hermitage Road, London, N.4 (phone STA 2278).

AT the **INTER-SOCIETY SHOW** held at Leamington on 27th March, the final results and league placings were as follows: Cichlids (1, Mr and Mrs Pearson (Rugby, *Apistogramma ramirezi*); 2, Mr D. Brace (Leamington, *Astronotus ocellatus*); 3, Mr and Mrs Pearson (Rugby, *Apistogramma reitzigi*). Anabantids: 1, Mr A. Whitnee (Rugby, *Betta splendens*); 2, Mr D. Lucas (Leamington, *Ophiocentrus goramy*); 3, Mr G. H. Smith (Tamworth, *Trichogaster leeri*). Breeders: 1, Mrs Delves (Atherstone, *Xiphophorus* sp.: red-eyed red); 2, Miss R. F. Shaw (Rugby, *Limnia nigrofasciata*); 3, Mr Delves (Atherstone, *Xiphophorus* sp.: yellow wag platy). Fish of the show (92 pts) was the *Apistogramma ramirezi*. An added attraction at the Show was the decorated jar class and 34 entries were received. Of these, the first three

### South Wales Federation

RAPID expansion of societies and growth of interest in aquarium-keeping is taking place in South Wales. Firmly established societies are those at Barry, Bridgend, Cardiff, Llantwit Major, Pontypool and Newport, and these have formed the **FEDERATION OF SOUTH WALES AQUARISTS' SOCIETIES**. Officers elected for 1966 are: chairman, Mr R. Wigg; vice-chairman, Mr J. Cavanagh; secretary (temporary), Mr M. J. Parry (45 Western Drive, Gabalfa, Cardiff); asst. secretary, Mr C. Roberts; treasurer, Mr J. Barnes. Next meeting for delegates to the Federation is on Saturday 7th May, 7.30 p.m., at the Old Arcade Inn, Church Street, Cardiff.

awards went to: 1, Mr B. Woolterton (Rugby); 2, Mrs P. R. Upton (Northampton); 3, Mr E. Upton (Northampton). The total points and position of the clubs involved are now: 1, Rugby (55 pts); 2, Atherton (43 pts); 3, Coventry (38 pts); 4, Leamington (37 pts); 5, Tamworth (29 pts); 6, Northampton (27 pts). The fourth and final round of this season will be held at Coventry, Wyken Community Centre on 15th May.

NEWS of RUGBY A.S. is spread wide. Extracts from the Rugby Newsletter are already printed in

New Zealand, and other countries including Rhodesia, Czechoslovakia, the United States and Canada regularly receive current publications. Now, shortly, a taped quiz is to be exchanged between Rugby and the New Plymouth Pool and Aquarium Society in New Zealand. At the March meeting of the Society, member Mr B. Fox gave a talk on 'Decorated Home Aquaria', illustrated by slides. Mr Fox dealt, step by step, with the setting up of a beginner's aquarium which would be suitable for entering a decorated aquaria competition. The choice of plants, suitable ornamental rockwork

and the selection of fish were discussed.

AT the BOSTON A.S. monthly meeting in March, the chairman, Mr Woodthorpe, gave a demonstration of glazing small tanks. The club is now beginning to flourish and a show for livebearers, judged by Mr Yeaton of Skegness Marineland, attracted a large entry. Meetings are held at the St. John Ambulance Hall, Boston, Lincs. and a welcome is extended to anyone interested in tropical fish.

Show dates—see page 62

## PETFISH photo competition

### Rules and Conditions

The following rules should be adhered to:

1. The competition is open only to amateur photographers.
2. Each entry or set of entries (no limit to number) must be accompanied by a completed entry coupon from a current issue, and sent to PETFISH MONTHLY (Photographic Competition), 554 Garratt Lane, London S.W.17. Final closing date for entries will be announced later.
3. All reasonable care will be taken of prints and transparencies but responsibility cannot be accepted for entries lost, delayed, mislaid or damaged in the post or otherwise. Proof of posting cannot be accepted as proof of delivery.
4. Each print or transparency should bear the name and address of the sender in capital letters.
5. Black and white prints should be glossy preferably, of not less than postcard size. Negatives should not be submitted.
6. Prints and transparencies will be returned only if a stamped and addressed envelope for this purpose is provided.
7. Entry into the competition will be deemed to constitute submission of the photograph for reproduction in PETFISH MONTHLY and reproduction fees will be paid for any material not in the prize-winning categories that is published.
8. All prize-winning photographs will be published in PETFISH MONTHLY without further fee.
9. The judges will be the Editor of PETFISH MONTHLY and one other (name to be announced). Their decision is final and no correspondence can be entered into concerning the competition.

### Categories

PetFish Monthly invites you to send in your entries under the following categories:

- I Black and white photographs  
 (a) Fish/aquarium scene (b) Garden pond
- II Colour prints and transparencies  
 (a) Fish/aquarium scene (b) Garden pond

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### Entry Form PETFISH MONTHLY Photo Competition

Please complete in BLOCK CAPITALS

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Address .....

Category of entry .....

I have read and will conform with the Rules and conditions of the PetFish Photo Competition. I declare that the entry (or entries) submitted are my own work as an amateur and not that of a professional photographer.

Signed .....

Date .....

Valid until 31 May 1966



Mr A. C. Lambart

**A**LTHOUGH it is only just over a year since Inter-Pet's Fish Supplies section moved to larger premises at Newdigate, Surrey, already it is working to full capacity and further expansion on a new site is being contemplated. Mr A. C. Lambart, who controls the wholesale fish supplies division for the Company, showed PETFISH MONTHLY's reporter around the buildings, which before extensive conversion previously had served another owner as slaughter houses.

Some 200 tanks, each up to 30 gallons in capacity, are used to hold the 60 or so species normally available. Most of these are fishes imported from Africa and the East, which are for wholesale distributors to the trade all over Britain. No retail business is done by the firm. Nearby Gatwick Airport is used to send some of these fishes to distant trade purchasers.

The buildings have been heat-insulated with expanded polystyrene, and it has been found necessary to run the Bering fuel oil-fired heating system only at night to maintain an adequate even temperature. The heater is fan-driven, blowing heated air for space heating. Air supply to the tanks, all of which are equipped with filters, is not from a compressor, the usual air source in commercial fish establishments, but from a special type of blower that gives a very high output at a satisfactory low pressure.

Mr Lambart described the care taken by his staff to avoid outbreaks

## Round and About the Trade

### Inter-Pet's Fish Section at Newdigate

of disease from newly arrived fishes whilst in quarantine. All jars and nets after use are sterilised by immersion in a large container of dilute formalin and tanks are thoroughly cleaned between batches of fishes.

New stocks were due to arrive the day of our visit and many tanks were clean and empty of fishes, awaiting the arrivals. Among fish in stock, however, were some very fine black lyretail mollies imported from Hong Kong, the females being particularly large. Some tanks of eye-catching, slender silvery fish having rainbow markings on their sides that flashed and faded as the light caught them seemed to be new to the import lists. 'They appear to be a species of *Basilus* from Thai-

land,' said Mr Lambart, 'but so far we have not identified them.' (Subsequently PETFISH MONTHLY was able to check the identity of some specimens taken for this purpose as *Basilus ornatus*.)

Mr Lambart, who is a well-known figure in the aquarium trade and has been with the parent company, Liquify Company Ltd., for six years, has a keen personal interest in aquarium fishes, and says he is very happy now to be doing a job which for many years was only his hobby. At one time he was a fish judge for the F.B.A.S. and was a familiar personality at the shows, but looking after a large-scale importing and distributing business leaves him little time for that sphere of fish-keeping now.

A CONCISELY printed table showing in summarised form the feeding habits, required temperatures, hardness, adult size and minimum tank size for 100 popular tropical fishes forms two pages of a new eight page colour folder that describes the full range of TetraMin products. This is obtainable by sending a stamped and addressed envelope to Herb Royal Limited (Colley Lane Estate, Bridgwater, Somerset).

SHIRLEY AQUATICS Limited have published an informative and well-illustrated 12 page booklet entitled *The Marine Aquarium Made Easy* (price 2s post free). This firm informs us that they are now handling the new sea salt mixture **Tropic-Marin-Neu** developed by Tropicarium Frankfurt, Germany.

KEITH BARRACLOUGH of Bradford is issuing two attractively printed and illustrated catalogues of equipment, one for retail and the other for wholesale customers. The

retail catalogue contains a useful diagram on aquarium lay-out and a page of information about keeping marines. For a yearly subscription of 5s, a monthly **News Sheet** is available from this supplier, and the latest issues we have received present some interesting notes on available new fishes and equipment.

BARRY M. AUSTIN, trade supplier, has produced a revised wholesale price list for retailers, giving details of several lines exclusively distributed from 95 Crown Road, Twickenham, Middlesex.

WE were shown the hot bitumen-sealing process by which **Meta-frame** stainless-steel tanks are glazed when we visited Inter-Pet Supplies Co. Ltd. last month. Increasing demand for these has led to a streamlining of the process. Three types of Metaframe reflectors and hoods are produced and a new stand of contemporary design is about to be marketed for these tanks.

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### INTERNATIONAL TROPICAL FISH EXHIBITION

Saturday 11th June: 12 noon-8 p.m.; Sunday 12th June: 10 a.m.-7 p.m. at the Drill Hall, Manchester Regiment, Ardwick Green, Manchester. Organised by the **Fancy Guppy Association** and the **British Killiefish Association**, including **Open Sections for Guppies, Killiefish and Furnished Aquaria for all Aquarists Societies**

Write for further details to Show Organizer, Mr R. Beresford, 99 Valley Road, Arden Park, Bredbury, Cheshire

### CALLING ALL AQUARISTS!

Do not miss the **Aquarists Convention and Open Show** in Birmingham Sunday 8th May 1966 at Moseley Secondary School, College Road, Moseley, Birmingham

The **SHOW**, Benching of exhibits 12 noon-3 p.m. **PRIZES CASH CASH PRIZES** The **CONVENTION**, Commencing at 3.30 p.m.: Jim Kelly, F.A.Z.A., F.A.I.P.A., is the Guest Speaker

Further information from the M.A.A.S. Secretary, Mr A. E. Allsopp, 50 Cubley Road, Hall Green, Birmingham, 28

### Dates for Your Diary

7th May. **CHELSEA A.S.** Open Show at Chelsea Community Centre, 385 Kings Road, London S.W.10. Benching: 1.30-3.0 p.m. Prize-giving: approx. 7 p.m. Show schedules are available from show secretary Mr R. Cox, 42 William Farnell House, Bagleys Lane, London S.W.6.

7th May. **TROWBRIDGE & D. A.C.** First Annual Open Show (22 classes) at the Newtown Junior School Hall, Newtown, Trowbridge, Wilts. Show secretary: Mr C. G. Pearce, 61 Alfred Street, Westbury, Wilts.

8th May. **MIDLAND ASSOCIATION OF AQUARISTS' SOCIETIES** Annual Convention and Open Show at Moseley Secondary School, College Road, Moseley, Birmingham. Schedules from show secretary Mr J. Edwards, 34 Veronica Close, Selly Oak, Birmingham.

14th May. **HENDON A.S.** 21st May. **CARDIFF A.S.** First Open Show at the Drill Hall, Park Street, Cardiff. Show secretary: Mr N. J. Counsell, 29 Llanmorlais Road, Gabalfa, Cardiff.

21st May. **WIMBLEDON & MERTON A.C.** at Holy Trinity Hall, The Broadway, Wimbledon.

4th June. **CATFORD A.S.** Open show at Holbeach Road School, Catford. Further details from show secretary: Mr K. D. Owen, 42 Elmer Road, Catford, London, S.E.6.

4th June. **FEDERATION OF BRITISH AQUATIC SOCIETIES** Assembly.

11th June. **BRIGHTON & SOUTHERN A.S.** Show at Ralli Hall, near Hove Station.

11th June. **LLANTWIT MAJOR A.S.** Show at the Town Hall, Llantwit Major (entries from South Wales societies only). Further details from Mr R. S. Wigg, 17 Ham Lane South, Llantwit Major, Glam.

10th and 12th June. International Tropical Fish Exhibition organised by the **FANCY GUPPY ASSOCIATION** and the **BRITISH KILLIEFISH ASSOCIATION**. Drill Hall, Manchester Regiment, Ardwick Green, Manchester. Saturday 12 noon-8 p.m., Sunday 10 a.m.-7 p.m. Show organiser: Mr R. Beresford, 99 Valley Road, Arden Park, Bredbury, Cheshire.

2nd July. **BRACKNELL & D. A.S.** Open show at Victoria Hall, Bracknell, Berks.

9th July. **BASINGSTOKE & D. A.S.** Annual Show. Details awaited.

9th and 10th July. **ROMFORD & REACONTREE A.S.** Dagenham Town Show. Show secretary: Mr J. M. R. Fyne, 3 Ashvale Drive, Cranham, Upminster, Essex.

30th July. **BARRY A.S.** Annual Show at Holton Road Primary School, Barry (entries from members only). Further details from show secretary Mrs E. Steer, 160 Inverness Place, Cardiff.

8-13th August. **PORTSMOUTH A.S.** Annual Open Show.

August. **BRITISH KILLIEFISH ASSOCIATION** Members' Show in Birmingham. Details awaited.

3rd September. **FEDERATION OF BRITISH AQUATIC SOCIETIES** Assembly.

3rd and 4th September. **NOTTINGHAM & D. A.S.** Third National Fish Show at the Drill Hall, Derby Road, Nottingham. Show secretary: Mr W. J. Christian, 40 Moor Lane, Bunny, Notts.

4th September. September Convention of the **FEDERATION OF SCOTTISH AQUARIST SOCIETIES** at The Good Templar Hall, Gray Street, Broughty Ferry, Angus. Host Club: **DUNDEE A.S.**

17th September. **NEWPORT A.S.** Fourth Annual Open Show at the Drill Hall, Stow Hill, Newport. Classes (24) include one for marine fish. Show secretary: Mr M. J. Parry, 45 Western Drive, Gabalfa, Cardiff.

16th October. **STONE A.S.** Open Show at the Walton Community Centre, Stone, Staffs. Schedules available shortly from the show secretary Mr K. J. Harvey, 61 St. Vincent's Road, Stone, Staffs.

29th and 30th October. **BRITISH AQUARISTS FESTIVAL** at Belle Vue, Manchester. Enquiries to show secretary: Mr G. W. Cooke, Spring Grove, Field Hill, Batley, Yorks.

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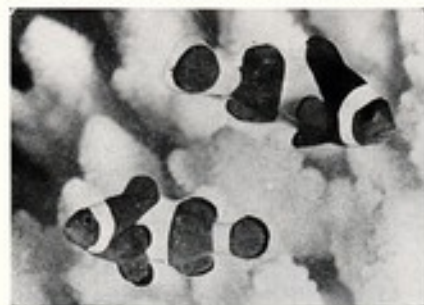
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