

NOVEMBER 1975

25p

Pet **Fish**

PRACTICAL FISHKEEPING MONTHLY



Contents include:

Giant All-Glass Aquarium
Dwarf Cichlid Spawning
Colour in Guppies
Coldwater Scene

Photography of Aquarium Fishes
Brocaded Fancy Carp of Japan
Dwarf Pencil Fish Breeding
British Aquarists' Festival Results, etc.



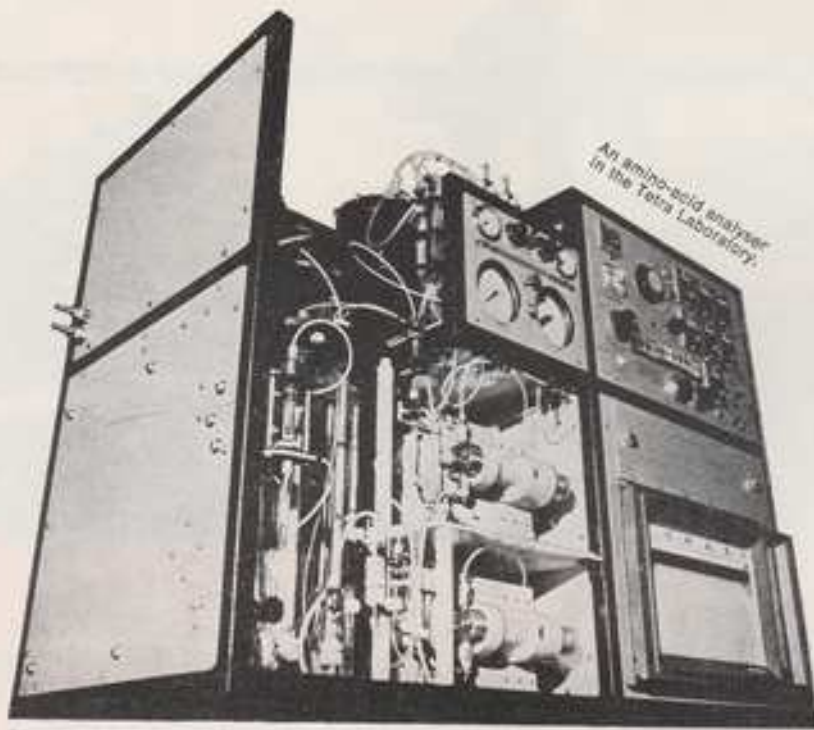
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Comments and Quotes

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Aquarium

Peep-holes

THE inclination of passers-by to pause and watch men working on holes in the road is well known. So well known that in cities the big hoardings surrounding building sites are now often furnished with peepholes or window openings so that the public can watch progress. In fact, to provide such inviting viewing openings encourages even more watchers to take up position. An astute owner of an aquarium shop in Kansas City, USA, is now applying the idea neatly to his shop front. Except for a number of port-hole openings at various heights the shop front is obscured, and each opening gives a fascinating glimpse into the backs of display aquariums inside the shop. Shop windows are unfortunately normally among the worst possible places to site set-up aquaria because of the algae that quickly form in the abundance of natural light. The idea of the Kansas City shopkeeper appears to provide a solution to this problem in part as well as giving extra encouragement for the inquisitive sidewalk audience to find out more about his wares.

Tubifex

Scarce

A MAN who has been collecting tubifex worms from London's Thames for the past 25 years

tells us that he has never known the low-tide mud to yield such poor quantities of the worms. The colonies were first noticed to be diminishing over a year ago, and this was recorded in PFM (June, 1974). Now the worm colonies are derisively small. The River Thames has become a much cleaner and sweeter water in recent years, and the decreasing sewage deposits together with an ever-increasing cropping of the tubifex worms to meet the demands of aquarium fishes appears to be the most likely reason why the worms are no longer doing so well. As we noted before in these columns, a clean river and oodles of 'tubi' just don't go together. Those who have had unfortunate experiences with using the worms as a food might mutter 'good riddance', but we who have always been keen users and advocates of the use of this excellent live food will mark the ending of the ready availability of tubifex sadly, as will our fishes.

Breeders'

Directory

THIS month we include the names of the first aquarists who have answered our invitation to appear in the 'Breeders' Directory', discussed and supported by Frank Orme in his 'Coldwater Scene' over the past few issues. The feature is open to amateur breeders of tropical fish as well as coldwater fish and its purpose is to locate breeding stocks of specific strains and varieties for other

would-be breeders, not to provide an advertising feature for people who are not genuine

specialist breeders and who are merely acting as part-time dealers. The 'Directory' is be-

ing tried as an experiment; we shall be glad to know of readers' reactions to it.



LETTERS



Your comments and views on all topics of interest to aquarists are welcomed. Address letters to PFM Letters, 554 Garratt Lane, London SW17 0NY

Electrical Equipment

WE feel that it is necessary to reply to your article in 'Comments and Quotes' (PFM Sept.) regarding the new Safety Electrical Regulations. Firstly, the days of the glass encased heaters and thermostats are not numbered. We would refer you to Mr S. Singleton's article in the same issue of your magazine, and would confirm everything he has to say — furthermore, so would most knowledgeable people such as aquarists and electronic engineers.

There is no case as you suggest for altering the present design as far as glass enclosed units are concerned. We would, however, agree that earthing of heaters and thermostats would be an added safety factor, and in fact our company already markets an earthed heater and combined heater thermostat. The present retail price for our earthed combined heater thermostat is £2.76 plus VAT, compared with £1.98 plus VAT for the conventional model. The earthed model has been available to dealers via wholesalers for over 5 years. Perhaps your writer was not aware of this step forward in design. Any of your readers who require further information on our earthed equipment need only forward a large S.A.E. for our illustrated catalogue.

Regarding your paragraph concerning 'cluttering of flex' behind the aquarium, we would like to point out that the adaptor type units, such as the UNO Cable Console, have also been on the market for at least 5 years, which eliminate completely any wiring problems.

In conclusion, we feel that it is the writer of your article who requires bringing up to date for 1976, and not the manufacturers or their designs as implied. The writer of your article has an invitation to visit our modern factory at any time he so

wishes, and he will be able to see for himself the advances that have been made by the company.

CONRAD ELLSON
Director, UNO Aquatic Products
Nantwich, Cheshire

We take the view that the aquarium interior is primarily for fish and plants. Wherever possible equipment should be outside the tank, whether electrical or not. If this is just an ideal at present that's how it must be; we would consider anything going towards this ideal as an advance and a real up-dating of the approach to aquarium equipment.—EDITOR.

Healthy Marines

REGARDING Mr Pink's article, 'Knowing the Limitations' (PFM, September), I would like to add a few comments based on my 25 years in the field.

I have seen salt water rise and fall many times over the years. Marines are so astoundingly beautiful, that anyone who sees them, will immediately want them for their own aquarium. But, alas, although marines are amazingly hardy, you just can't drop them in a tank and forget them like you can freshwater fish. Nor is it a simple matter of checking the nitrates and nitrobaeters.

You must first learn about salinity and keep your water at 1.025. You also need to age and filter the water for a few weeks before adding the fish if you are using artificial seawater. You must introduce the fish to the aquarium slowly so that it becomes adjusted to the new water.

But most of all, you must obtain clean, healthy, disease-free fish. Believe me, this

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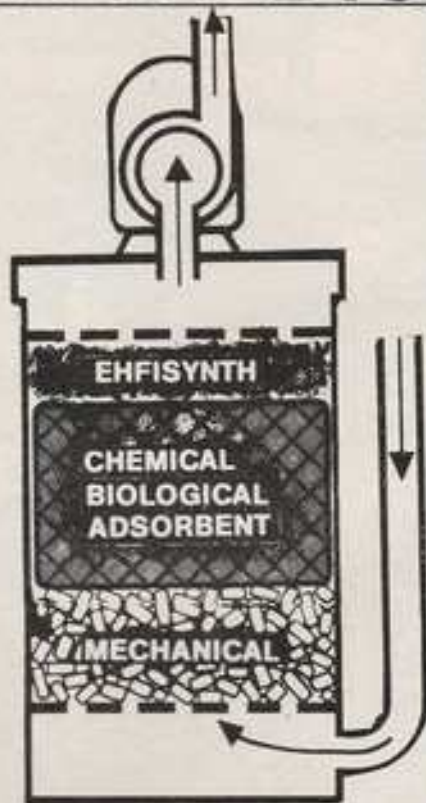


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LETTERS

continued from page 306

is the *whole crux of the matter!* I have seen 10 year olds keep a healthy salt water tank without a single loss! They caught the fish themselves and kept them in fresh seawater which are two important things in their favour.

When I was collecting marine fish full time (for 18 years) my annual loss was less than a half of one per cent. I didn't collect with drugs or poison and my fish were disease-free. Healthy marines are not difficult to keep at all. When fish die overnight in the aquarist's tank, either they are not good fish or the water in the aquarium is of poor quality. Healthy marine fish just don't drop dead overnight in the aquarium. They can live for 3 months without even being fed!

There are far more important things in the marine field than nitrates, cycling and all that rot. Good quality fish, compatibility, proper feeding, proper salinity and aquarium filtration are most important, combined with a bottle of copper to be added when and if it is needed. There is so much misinformation about salt water that we have decided to come out with a large ANNUAL issue of SALT WATER AQUARIUM MAGAZINE, to set the record straight. Many, many people have requested it.

ROBERT P. L. STRAUGHAN

Silver Springs, Florida, U.S.A.

Research into Cichlids

I HAVE just received confirmation of a Science Research Council Award tenable at Bristol University to study certain aspects of the biology of cichlids (South American in particular) for the next 3 years. However, I do need to locate specimens, or more specifically breeding pairs of South American cichlids, so if anybody has fish they are willing to sell or donate I would be most grateful to hear from

them. My address is 88 Kings Drive, Bishopston, Bristol BS7 8JH. Anybody in Bristol is welcome to visit me in my laboratory during the day (lab. B59 in the Zoology and Botany Building, Woodland Road, Bristol).

IAN SELICK

Bristol, Avon

Cichlid Identity

FOLLOWING Barbara P. Mayers' article in the August edition about *Labidochromis 'opaline'* I feel I should point out that this species is also known under a number of other names.

The species in question was first imported some time ago as the Likoma island variant of *L. coeruleus* and the names *L. likomae* and 'pearl of Likoma' were often applied. One of the German importers listed the pearl of Likoma as *L. spp. chipoka* and this name became corrupted to *L. chipokae*. Around about the same time a Canadian magazine published an article about a certain *L. joanjohnsonae*, which is the same species again. To add to the confusion many 'Malawi' keepers confuse this species with *L. flecti*, or is it *L. marineatus*?

It has been recently suggested that the species is not even placed in the correct genus. It does not have the mouth generally associated with *Labidochromis*.

The application of the name *L. 'opaline'* is possibly correct — perhaps Barbara P. Mayers can tell us where the name originated.

S. WOLSTENHOLME

Littleborough, Lancs.

Pen Pal Wanted

I HAVE been interested in tropical fish-keeping for about 2 years now, and I would like a young hobbyist pen pal. I live 8 miles from my nearest club (Canterbury) and find it hard to get there. I am 13 years old.

TIMOTHY FRANKS

19 Pier Avenue,
Tankerton, Whitstable, Kent

Apologies

ON behalf of South Leeds Aquarist Society, I would like to apologise to any persons inconvenienced by the cancellation of our Open Show, which was to have been held on 28th September 1975. It was due to short-notice cancellation of the Hall, and in the short space of time that we had, we were unable to find another suitable venue.

We hope to hold another show early next year and hope our friends and visitors will continue to support us as they have done in previous years.

A. AUSTWICK

Show Secretary, South Leeds AS

Club-Company Liaison?

OUR Club has started a scheme primarily for the benefit of beginners in the hobby. In this we have discussions and illustrations where possible on starting up fishkeeping. We thought it would be a good idea if we could have either literature, e.g. advertising material, or technical details on the products of the various companies, to assist the beginner in starting the hobby. We have so far had great diffi-

culty in obtaining this information as we find that either the shops do not use and therefore dispose of this material or that the companies do not put out sufficient.

We think it may be an idea for the companies, instead of sending the literature to the shops, to distribute it to the clubs; the clubs would then generate the demand necessary for that particular product in that area in that they would go back to the shops and ask for a particular product that they have the information on. This idea does work in the case of the medical profession in that the doctors receive samples and pamphlets and, therefore, they can create the demand.

This would not be so hard to do as all it would require is an up-to-date list of the secretaries' names and addresses, which can be obtained from the Federation of British Aquatic Societies and the Confederation of United Kingdom Aquarists.

These two bodies, although they may not have the information on hand, would be able to acquire it without difficulty from member Associations and can keep the companies supplied with an up-to-date list.

(Mrs) S. WOODLIFFE

Secretary, Lincoln & DAS

PFM Breeders' Directory

Entries are made without charge as a service for breeders and readers. No responsibility for inaccuracies or dealings can be accepted by PFM. Readers are reminded that (for coldwater fishes in particular) stock will not be available at all times of the year. Enquiries by letter should contain stamps for replies.

R. J. Bennett (1 Heath Walk, Downend, Bristol BS16 6EY): lionhead, veiltail and Bristol shubunkin.

D. Easingwood (7 Cardale Croft, Binley, Coventry CV3 2ET. Phone Coventry 457555): fancy

goldfish, especially Bristol shubunkins and lionheads.

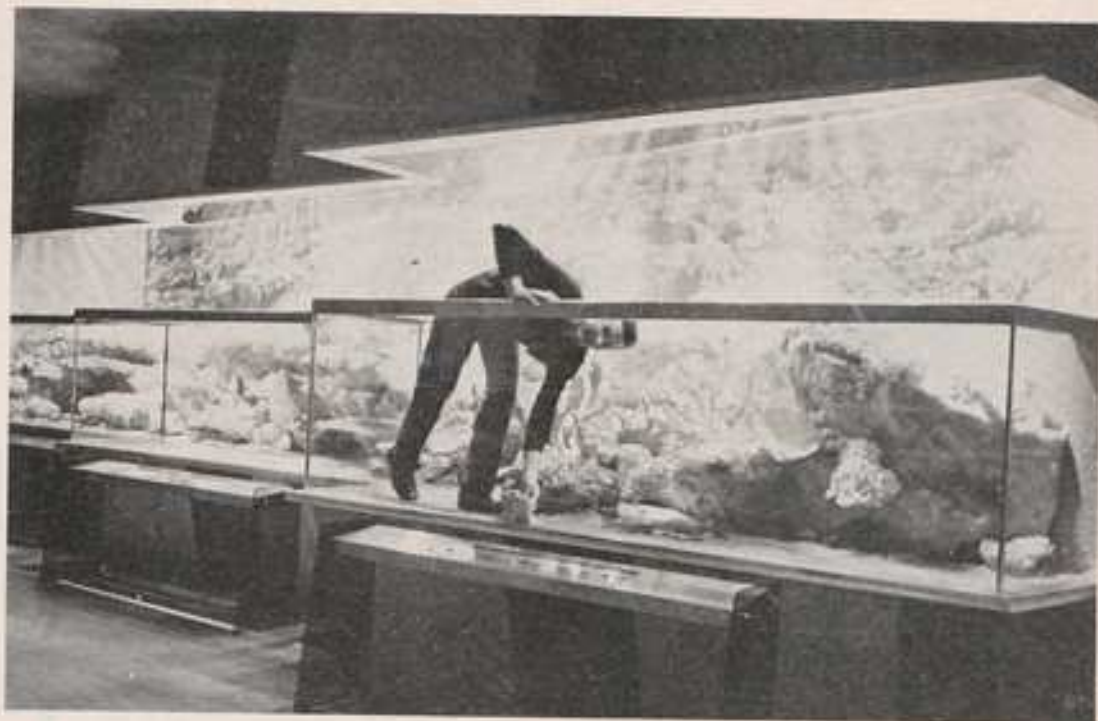
Mrs J. F. Farmer (Flat C, Longstone, Under Minnow Road, Pilton, Barnstaple, N. Devon): *Aequidens curviceps*, *Apistogramma borelli*, *Apistogramma steindachneri*.

D. Hanns (57 Fraser Street, Burnley, Lancs. BB10 1UL): Livebearers-*Heterandria formosa*, *Phallichthys amates amates*, *Gambusia affinis affinis*, *Girardinus metallicus*, *Xiphophorus xiphidium*, *Heterandria (Pseudoxiphophorus) bimaculata*, *Poecilia (Limia) vittata*.

Miss Yvette Long (35 Meyer Road, Erith, Kent DA8 3SJ): guppy varieties — red delta, green king cobra, flame gold and gold.

F. W. Orme (94 Newman Way, Rubery, Birmingham B45 9LZ): lionheads and veiltails.

T. G. Sutton (2 Willaston Road, Marston Green, Birmingham 33): broadtail moors, calico veiltails, shubunkins, fantails, orandas, scaled veiltails.



Giant All-Glass Aquarium at the Nancy Aquarium

By D. TERVER

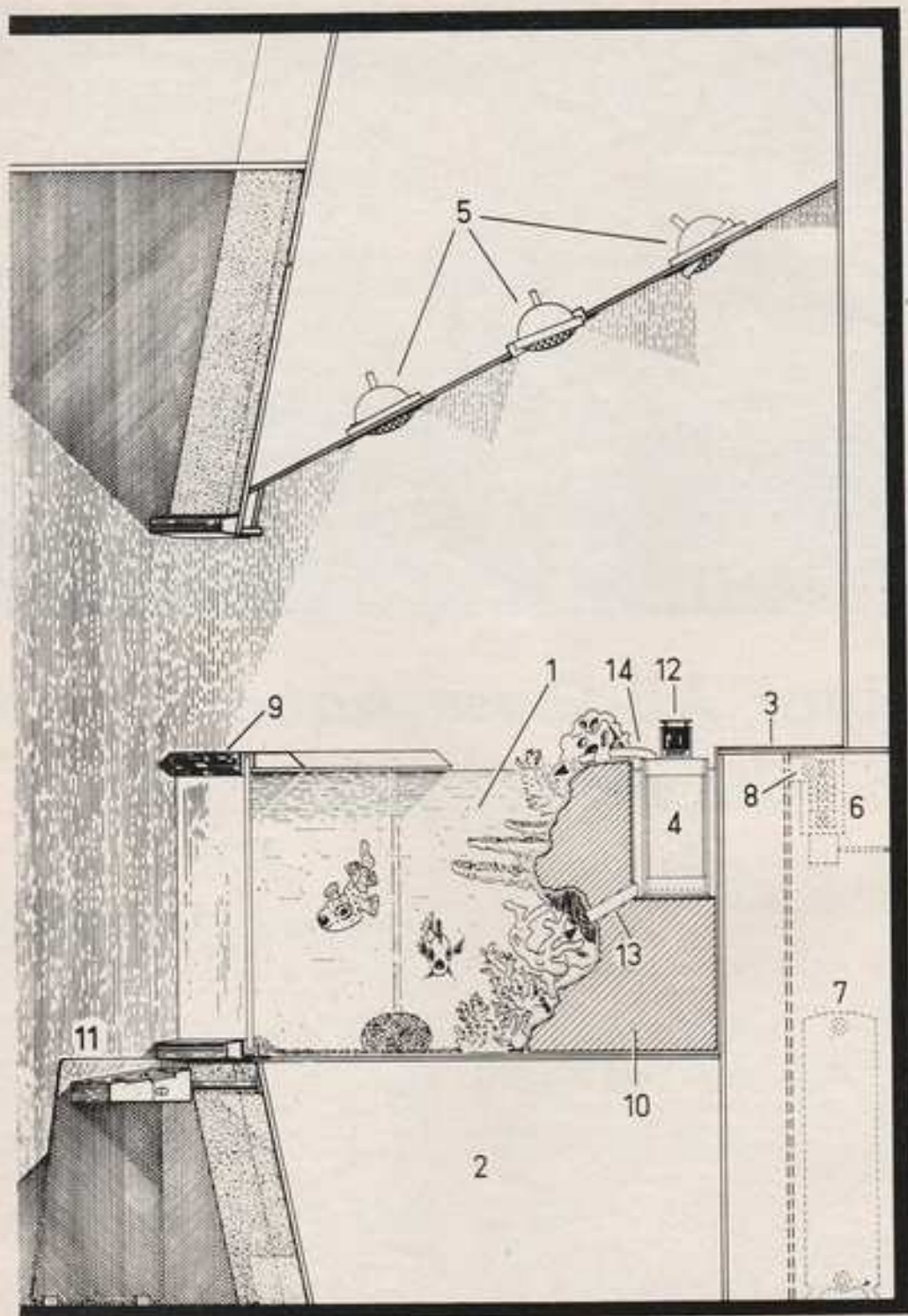
Illustrated by the author

NOW in service in the Tropical Aquarium at Nancy, France, is the 1760 gallons (8000 litres) tank, or aquaterarium, that we constructed ourselves. It is 32 feet (10 metres) long and nearly 3 feet high (0.90 metre) with the width varying from 20 in. to nearly 5 ft. (0.50 to 1.50 metres); the tank has a capacity of 8000 litres of artificial sea water and occupies the whole of one side of the west gallery of the Aquarium. Constructional and other details are shown in the illustration, and numerals in the following

text refer to the labelling of the drawing.

The tank itself (1) rests on a framework of criss-crossed panels of Novopan (2) and is supported on steel beams that distribute the weight over the floor. A catwalk (3) gives access to the back of the tank, to the filters (4), the spotlight (5) and the three control compartments (6) that stretch the length of the tank and each of which is fitted with a central heating radiator (7). These three compartments are equipped with electric control panels and each contains a 30 watt ultraviolet tube (8). The base and back of the tank, and also the catwalk, are made watertight with three separate layers of glass fibre matting, impregnated with polyester resin.

The front of the tank consists of three sheets of glass 19 mm. thick, 9½ ft. (3



metres) long and nearly 3 ft. (0.90 m.) high, arranged as staggered panels with side glasses 32 in. (0.80 m.) long and of the same height and thickness. The glass panels are assembled with the aid of transparent silicone rubber sealant with the glass fibre of the tank base having been treated in advance with a suitable primer to ensure adhesion of the sealant. A forward projecting ledge (9), 8 in. (20 cm.) wide, made of stainless steel 5 mm. thick, reinforces and gives rigidity to the whole unit. Assembled and welded into a single piece, it exactly fits the staggered arrangement of the front glass panels; the jointing compound is again silicone rubber sealant.

Decoration

The sculpted relief that forms the background to the interior of the aquarium was hand-carved from large blocks of expanded polystyrene (10), which were then covered with polyester. First of all, a gel coat containing extra catalyst was applied: the rapid hardening avoids damage to the expanded polystyrene. (A resin that does not affect expanded polystyrene can be obtained.) Next, two or three layers of glass fibre mat, impregnated with resin, were built up over the base gel coat. Finally, a second gel coat was applied and, while still wet, was sprinkled with grains of quartzite sand so as to give a more natural appearance to the background. Chunks of coral were then fixed to the aquarium base with glass fibre mat and resin, creating a realistic reef display. This decor, continuous above and below the water line, has been modelled so as to blend in with the scenery depicted in a huge photograph of a coral reef which decorates the rear of the Aquaterrarium above water level. The facing to the aquarium supports on the viewing side, and also above the tank, has been made with various sized panels covered with marble chips in two different colours, all bound together with a plastic coating. Three stainless-steel units (11) situated in front of the main viewing panels of the aquarium house the transparencies that

identify the aquarium's various inhabitants.

Filtration

One central and two side filter compartments, housed in the slabs of expanded polystyrene and linked by inlets (13) to the main tank, accommodate the four filters (4), which together have a total flow rate of 2640 gallons (12,000 l.) per hour (4,000 l./hour for each of the side compartments, 2000 l./hour each for the central ones).

The filter medium consists of two upright blocks of plastic foam for each filter, 8 in. (20 cm.) wide and 3 in. (8 cm.) thick, the height being adapted to suit the dimensions and capacity of the filter (24 in., 60 cm., for the side filters, 14 in., 35 cm., for the central ones). These blocks fit into channels in the side of an all-glass fabricated tank, the ends of which are merely reinforcing strips of glass at top and bottom. Water circulation is achieved by means of an impellor pump (12) placed between the two foam blocks of each filter, sitting on a P.V.C. support. The water is returned in a powerful stream at the tank surface (14) to help aerate the tank and create a current.

Water purification is further ensured by means of a skimmer placed between the two filters, within the central filter chambers. Partial sterilisation of the water is achieved by means of three 30 watt ultraviolet lamps (8) located in the control compartments. By means of Eheim impellor pumps, with a capacity of 77 gallons per hour (350 l. per hour) the filtered water is taken from the central compartments of the three filters, passed close to the lamps and returned to the tank.

Lighting and Heating

Twelve moveable spotlights (5), totalling 4,600 watts, are housed in the ceiling, giving a light which shows the fish off to advantage and is also sufficient to support the growth of algae. The period of illumination (8.00 a.m. - 9.00 p.m.) is regulated by means of a time-clock.

The heat radiated by the spotlights is sufficient to keep the water temperature around 79-81°F (26-27°C). Separate heaters, located in the various filters, can be easily brought into use should the need arise, however.

Opposite: diagram of vertical sectional appearance of the giant aquarium and floor to ceiling area. The numbers on the diagram are identified in the article.

COLDWATER SCENE

By FRANK W. ORME

LAST month I remarked upon the troubles that some coldwater fishkeepers had encountered, due to the prolonged high temperatures of the past summer. A few days after writing the notes I came across a report in the local newspaper: the caption read 'Killer Infections menacing Midland Birds and Fish'. The item revealed that many birds were being killed by a disease caused by the long dry spell, and a veterinary surgeon said that many wild birds, especially those that feed around the receding water lines, were infected by a toxin produced by bacteria in decaying vegetation. Many fish were also said to have been killed, particularly those in ornamental garden pools, and experts were carrying out post mortems in an effort to identify the disease. It was thought that the killer was a virus that had been carried into this country by imported fish.

The symptoms appeared to be the same as those that were reported to me: inflamed areas on the body, fins rotting very quickly and death within a very short time. It seems that, at first, many pool owners thought their fish had been clawed by cats but this was disproved by the numbers affected. One quite large supplier said that he first came across the disease last year in imported fish. I have since heard that some dealers suffered considerable losses of stock.

If an embargo were placed upon imported fish, as was thought possible some time ago, this sort of thing could be controlled — or better still, prevented. Infections such as this could cause widespread damage to our native fish if it were allowed to get a hold in natural water. Although there would be protests against any Import Restrictions, in the long term such a ban would be beneficial, both to the foreign wild fish and our own native species. Aquarists would not be deprived, for there are enough people breeding both coldwater and tropical fish to ensure that stock would

Ban on imports no hardship?

- **Successful Midlands Show**
- **Spinach as a fish food**
- **Wintering**

be available. Being home bred, the chance of disease is greatly reduced and the survival rate of an acclimatised home-bred fish is much higher than the imported specimen. The 'Breeder's Register' would make the finding of a breeder of a particular fish quite a simple matter. Readers will know PFM is prepared to insert information in the 'Register' free of charge if breeders will send their name and address together with details of the varieties bred — coldwater or tropical. A ban on importing fish would cause no real hardship to the hobbyists.



Considering that the Midland Aquatic Festival is financed, planned and managed entirely by the Midland Aquarium and Pool Society Show Committee, without the benefit of outside assistance, they must be congratulated upon a 'job well done'. This year's Festival, lasting for 3 days, was the second (and the thirty-second 3 day show) organised by the Society. With coldwater, tropical, marine and herpetological exhibits, in all 65 classes were staged. The well-supported coldwater section had 22 classes; most Goldfish varieties having a class to themselves, plus breeders classes for single fish bred during 1975, in both singletail and twintail, together with teams of four 1975-bred fish in both variety classes. Coldwater fishkeepers were thus very well catered for and entries came from a wide area.

Specialist societies were in evidence and it was pleasant to meet, and talk with, members from Bristol AS, Association of Goldfish Breeders, Northern Goldfish and Pondkeepers Society and Goldfish Society of Great Britain. Members of the Association of Midland Goldfish Keepers, together with the organising society, were also well represented. From conversations it seemed most were well pleased with the coldwater

exhibits but had little enthusiasm for the arrangement of the tropical classes. We coldwater enthusiasts appear to share a common liking for the fish to be staged in bare tanks, in rows set at a convenient height for viewing. I wonder whether the exhibitor of tropical fish really prefers to show his fish as part of a society stand? This style of presentation must, by its very design, preclude the non-society fish-keepers from showing and that, surely, cannot be a good thing.

What a pity that the names and addresses of the exhibitors were not included in the show programme; perhaps it is considered irrelevant information, even though very many people find such information interesting. Names of exhibitors were displayed above each class but this is not the same as having it in the programme, which can be referred to again — even years later!



Do you feed boiled spinach to your fish? A good many aquarists do, for there is no doubt that it is an excellent green food with which to supplement the diet of fish. An exceedingly good substitute is duck weed! Gather enough for your requirements, place it in a pan with water and bring to the boil. This will kill any pests, after which it can be allowed to simmer for 10 to 15 minutes. Strain off the dark brown liquid and you are left with a green food that looks similar to spinach. My own method is then to place the duckweed in a liquidizer and reduce it to a pulp. This puree is then placed in a pan of water — just enough to make runny, porridge oats are added and it is all simmered, whilst stirring, until the mixture becomes a thick pudding. Remove it from heat and beat in a raw egg; with sufficient beating the mixture will become quite stiff, and can be placed in containers to be deep-frozen, or kept in the refrigerator. I find that my lionheads and veiltails eat this food with apparent relish. It has a slight laxative action, so feed in small quantities as a change from other foods.



In the Sparkhill area of Birmingham live an elderly couple who have discovered that predatory birds and other animals are

not the only things to guard against! In the garden, behind their home, is a large pond which had matured over some years. Amongst the thick water plant growth were a number of large koi and shubunkins, and the picture was completed by the marginals and small bog garden. On the odd occasion that I had to visit the couple they would insist that I took a look at, and admired, their water garden. It seems that others also admired the pond, or perhaps it was envy, for recently strangers decided to visit the garden. During the hours of darkness the pool was almost stripped of plants and forty fish were taken. When one considers the equipment and containers required, to say nothing of the time involved, even in daylight, to successfully carry out such a task it is absolutely amazing that not a single person saw or heard anything suspicious. Apart from the roguery it was also obviously, a well planned and audacious operation carried out by people experienced in the handling of large fish, avoiding any noise or splashing that would alert anyone to what was happening. What, I wonder, did the thieves eventually do with the fish and plants? Did they go to complete someone's new pond or were they sold to some unquestioning dealer?



This month is a gentle, restful time during which Nature slows down and conserves her energy for the coming winter. The thinking owner of coldwater fish will have noted these changes and acted accordingly. Outdoor pools either have been, or will be, cleaned out in order to provide clean, healthy living conditions for stock.

At this time of the year it will be noticed that the appetite of the fish has increased — they need to build up a reserve of fat to carry them over the cold lean winter period. This need can, and should, be satisfied by increasing the number of feeds given.

It is my firm belief that all coldwater fish should pass through the cold months with an absolute minimum of cossetting. A period, during which the fish can become semi-dormant, of really cold hard conditions and during which all food is withheld, obeys the laws of Nature. Fish that

Continued on page 334



by
ARPEE

Personal COMMENT

THE future of aquarium heaters is indeed a burning question — or so Comments and Quotes in the September PFM would have us believe. The editorial note takes the line that the existing form of heaters could be greatly improved upon, whilst Mr Singleton, an experienced manufacturer, states the case for the traditional presentation.

There are few things on which the layman is more ignorant than safety of electricity, and since I fall right in this class I shall continue to marvel at the efforts of the erudite to explain the finer points in a fashion which is even remotely understandable by the average user. We may expect some weighty correspondence before this is past and done with, but I wonder how much of the technical argument will be actually taken in by the reader.

It is in just such a situation as this that one tends to judge by results, and I must record very considerable support for the views expressed by Mr Singleton that, whatever the technical argument, the real risk is not very great. It has been my impression during the past 10 years that a lot more thought has gone into the manufacture of aquarium heating equipment, and although certain components are woeful (like the control mechanism on adjustable heater/thermostats), the overall effect is improving all the time. I believe that to judge whether an installation is lethal or not, you have to look beyond the tank, to its environment and mounting, and to consider matters like humidity, body resistance and so on. I believe that even if you develop equipment which is theoretically unassailable, things can still go wrong in the hands of fools.

We have to admit that many of us are such utter fools where equipment is con-

cerned, that we will string all sorts of oddments together so long as they will heat a tank satisfactorily. In the face of all this there have apparently been hardly any serious accidents. It rather worries me, therefore, that if manufacturers produce heating devices which are safe (*sic*) but unpopular, we shall hang on to every single bit of unsafe (*sic*) equipment we now possess — whether it is nearly useless or not — and use it well past the point at which it should not, in all fairness, be used at all. We may try to force old heaters into tubes just that bit too small for them, or to interconnect incompatible components in some sort of last-ditch stand. This could, of course, involve us in serious trouble. Better, I would say, to look very hard at what exists and make a determined effort to rectify the weak points. But the look should be made by educated persons — that is, educated in the applications — and not by theoreticians far removed from the realities.



Editorial rightly insists on a more enlightened approach, but I seriously wonder whether the plea is not a little too generalised to receive the widest actual support. For example, the attractiveness of sub-tank heating is not apparent to all. It has solid appeal to the fish house installer, and to the organiser of shows, but the owner of the odd tank or so will probably want something he can just drop in and switch on. The conventional heater is something quite positive — it heats the water quickly and it is in direct contact with it, and therefore it must be efficient. The rate of recovery after power cuts must be more satisfactory than external systems, which probably have real shortcomings under these conditions. Regrettably I think we shall have to assume that no-power situations are factors which we shall have to live with, in equal measure with rising costs of electricity.

There are certain improvements I should very much like to see. A heavier duty glass container for the heating element. A more reliable stopper thereto. An insulated line connector supplied with every heater (in fact, with every piece of equipment if desired by the purchaser).

Personal Comment

(continued)

These are mere details. But a thing which perplexes me most is that, unlike my car dashboard or my hi-fi control panel, there is nothing helpful by way of communication between the equipment and me as to what is actually happening. Many equipments are fitted with neon indicators, but these simply tell you that current is flowing, assuming, of course, that they are themselves in working order. What I would like to have is something that tells me that something is *wrong*, i.e. that the heater has packed up or that a contact has got stuck. In other words, red usually tells me that something is wrong. We usually interpret the neon as telling us that because it is on, all is well. If it only came on when it spelt trouble, we would be that much more likely to notice it.

Fortunately there is time to muster ideas and voice them to those who have control over events. But we should make certain that we do not idly accept changes just because a certain measure is a little safer than an alternative. The changes have got to make sense and they have got to be acceptable to reasonable people. Lots of lives have been lost on the roads because pneumatic tyres have failed, but I have not noticed any legislation tabled which proposes a return to solid ones.



Many fish have spots on, but it is another matter to nominate a round dozen species which can be described with any confidence as spotted fish. Nevertheless, a careful selection of some of the species mentioned below could provide a tankful of fish to contrast with all the other colour and pattern groupings I have suggested in earlier articles.

Before making a choice, something must be planned by way of aquarium décor which will not merely nullify the effect which has been sought. Too strong an overhead light will simply wash out the spots, and of course any speckled gravel will do the same. Choose a self-coloured

gravel (even black can be acceptable), and do make sure that the water conditions are right for the fish which occupy the tank; if this latter point is neglected, even good specimens will look wishy-washy and will prove disappointing. The plants are probably best from the broad-leaved group, as the finer species do tend to fragment over a period, and the bits and pieces will litter the tank floor and further help the fish to disappear as their natural camouflage takes effect. All in all, you have the task, with spotted fish, of coming into direct conflict with natural camouflage tendencies, and if you can achieve a striking display with this material, you can take a lot of well-earned credit. A further point to aim at is a lay-out with a number of good open spaces, though the actual plantings should be particularly thick and massed.

Although the spotted barb is nothing much to look at, the chequer barb (*Barbus oligolepis*) is a lively little fish, under 2 inches, which scores high points on colouring alone. There is gold, black, orange, yellow and olive in this fish, and often other colours, too. They are very variable in quality, but if you can obtain wild-caught specimens, these usually look the best. For softer water conditions, the clown and spotted rasboras (*Rasbora kalochroma* and *R. maculata*) offer tones of red and brown with black spots. The former grow to about 3 inches but the latter are midgets and do not get above an inch. Neither is particularly easy to come by, but then rasbora shipments all seem a bit erratic, and often specimens are of poor quality. *Chilodus punctatus*, the spotted headstander, is one of the few really outstanding spotted species, and is highly recommended. It grows to about 3 inches, is greenish buff in colour, and is covered with lines of brownish black dots. It tends to swim at 45 degrees or so, and for those who are not upset by this posture, a group of half a dozen or more is essential if their presence is to be felt. Their means and manner of locomotion are fascinating, and I know of no bad habits on their part. They could thus form a useful nucleus around which the remainder of the collection could be built.

Though the pencilfish offer no spotted species, I cannot resist once again recommending the barred pencil (*Poecilibrycon espeii*) as a possible contender. Its golden

The small corydoras catfish known as *Corydoras melanistius* is one of the tropical species exhibiting spotted body markings that we discussed in the article.

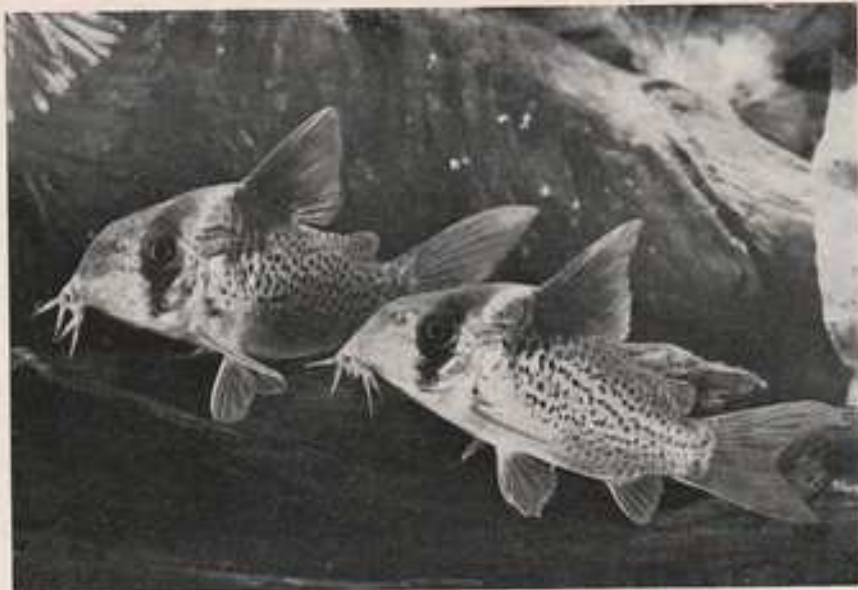


Photo: B. Kahl

overtones and those very distinct black smudges (call them bars or spots, as you please!) — all wrapped up in a very well-behaved 2 inch fish, make this another confident recommendation. If only you can get hold of a few of them!

The next grouping — the *Corydoras* — presents at least four suitable species: *C. brevirostris*, *C. julii*, *C. melanistius* and *C. multipunctatus* are excellent little catfish, all growing to a little under 3 inches. Of the four, I think the last-named is the most striking, but opinions do seem to vary as much as the fish themselves. Nomenclature and identification of *Corydoras* species has been growing over the past 15 years, as more and more discoveries have been made, and fish are very often offered for sale as 'unidentified corydoras'. The best advice is to look around before buying and to select the spots first and catfish second. There are no bad catfish, so if you like the pattern,

you really have no option but to take home at least half a dozen of these really fascinating and long-suffering creatures.

My final selection, really to grace and enhance the attractiveness of these other species, is another fish which I have mentioned earlier in this series. It is larger than the above, but I make no apologies for suggesting the lace gourami (*Trichogaster leeri*) as the finishing touch. Just a pair will do. They grow to 5 inches and display such a gorgeous range of colouring from silver through blue to red, that they must be virtually irresistible on this alone. But their fine shape and delicately drawn features are matchless.

I have omitted the spotted scat and the spotted puffer because these are really at their best under brackish conditions. Further, they can prove snappish in association with some of the tiny species we have dealt with, and are best considered separately.

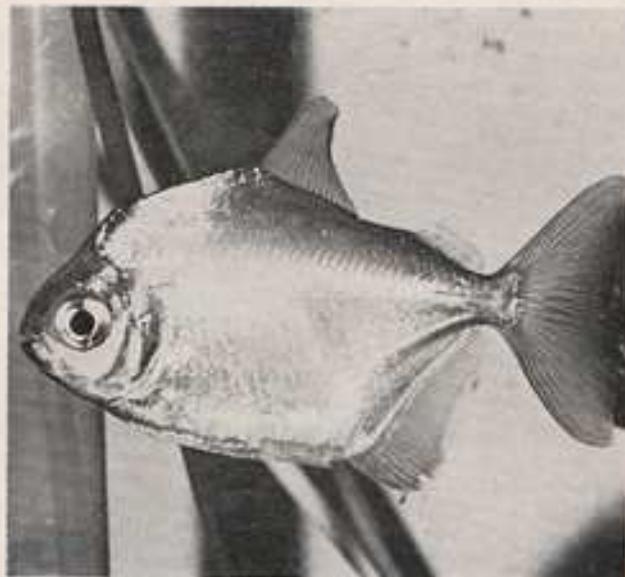
MR B. DEVISON, secretary of the BRITISH KILLIFISH ASSOCIATION writes, "Members of the British Killifish Association from all parts of the country recently converged on Treberthydd in South Wales for a fascinating lecture on killies by Dr A. Rodda from Vienna. During the past year many new

species of killies have been made available to BKA'ers by Mr J. Parker the BKA Species Controller. Also available to BKA'ers and the general public is a new publication 'An outline of Killie Keeping' by A. J. Wright, the BKA Technical Editor, at a cost of 45p. p.&p. paid. It is regretted that due

to rising inflation the enrolment fee has had to be increased to £4.00 for U.K. members with proportionate increases for Overseas members. Further information can be obtained from me at 'Australis' 2 Shaw Road, Tipton, West Midlands, DY4 7QA, on receipt of a stamped addressed envelope."

Readers who follow the hobby of photography as well as aquarium-keeping often request information about taking pictures of fish in aquaria. In this article CLIFF HARRISON discusses the practical points of fish photography from his own experience

Photography of Aquarium Fishes



A successful 'shot' of a specimen in an aquarists' shop aquarium (photograph by the author taken at St John's Aquaria, Wandsworth, London)

MANY types of camera are used for fish photography, and naturally the choice is, to some extent, one of personal taste. I think that the advantages of the 35 mm. single-lens reflex cameras — in particular their relative cheapness and versatility — make them specially suitable for aquatic subjects, though I would admit that there are some occasions when the higher quality of results from larger format cameras is worthwhile (such as with the 2½ in. square twin-lens models).

I have two 35 mm. Praktica cameras, mine being basic models without built-in light metering, but perfectly adequate nonetheless since I almost invariably use electronic flash. They are very easy to focus accurately on the subject, and a wide range of not-too-expensive accessories is readily available. By using 35 mm. film, the actual 'running costs' are kept to a minimum — particularly by buying black and white film in bulk lengths and subsequently processing it myself.

For very large subjects (10 in. and over) I can use the standard 50 mm. lens, but for most work I prefer a 135 mm. telephoto lens used in combination with anything up to two full sets of extension tubes. This method means I can photograph the smallest of (adult) fish, filling the frame with the subject if necessary, yet still be positioned far enough away from the tank to avoid scaring the occupants. I always use flash for individual fish, placing the flashgun a little to one side and rather higher than the tank, pointing downwards to the subject at an angle of about 45° (to avoid reflecting in the camera) and about 10-12 in. from the front glass. Sometimes I use a second flash unit overhead (to reduce shadows), or to illuminate a plain background (which can show fins and body-shape in greater detail).

Since much of the brilliance of the flash is lost when it passes through water, a larger lens aperture is needed than if the

flash were just passing through air. However, at such a close distance, most small flashguns are sufficiently powerful for a camera setting of f22 to be used if the subject is very near the front aquarium glass or f16 if it is further back. This suggestion is on the basis of a film speed of ASA 100 or 125, and is a guide only; you must first experiment under your own conditions to determine the best settings, keeping careful notes as you go along. Remember that the use of extension tubes or bellows reduces the 'real' lens aperture, so allowance must be made accordingly.

The camera, used with a tripod wherever possible, must also be positioned rather carefully to avoid any metal parts reflecting off the front glass of the aquarium. I normally like to keep the camera pointing slightly downwards, and to use a dark cloth draped over the top of the tripod to prevent any reflections coming from there. Alternatively, a sheet of matt black card about 10 in. square, with a hole cut in the centre to slip over the front of the lens, should help to reduce the danger if the camera is pointing straight at the tank. Another problem can be experienced with sunlight illuminating objects behind the photographer, and these being reflected off the front aquarium glass. If a large dark cloth is not available to mask these, it is better to close the curtains and rely on a moderate level of overhead room lighting for focussing on the subject.

I know some people prefer to use natural light (daylight) for photographing their fish. Let me just say that the sharpness one gets in the picture from using very small apertures, the 'freezing' of movement with the brief flash duration (1/1000 second or less); the consistency of results — these, I consider all to be overwhelming advantages in favour of flash. And besides, I do most of my aquarium photography indoors or at night anyway.

Far more important than the choice of camera or film are the following points, for if you ignore them you cannot get a good picture regardless of the equipment you have:

1. The inside and outside of the aquarium glass must be absolutely clean, and free from algae, smudges, dust etc. For this reason I have constructed a number of special all-glass photographic tanks

(using silicone rubber sealant), which get used for nothing else.

2. Make sure the water is crystal-clear: if there is more than the odd speck of sediment floating around, then you would be wasting the film if you carried on.

3. If you fill the tank with water fresh out of the tap (at the correct temperature, of course), beware of the little air bubbles that quickly form on the glass, rocks, and even on the fish. If you can't clear them let the water stand for 24 hours.

4. Let the fish settle down after you have finished adjusting the position of the flash, camera, background etc. Who wants to photograph a colourless fish hiding away in the corner?

Finally, the choice of film: again very much a matter of personal taste. For black and white it is hard to beat Ilford FP4 (125 ASA) in any consideration. For colour slides, I think that Fujichrome (100 ASA) does greater justice to fish colours than some of the better-known brands.

I would suggest the beginner doesn't rush straight out and buy everything in sight — get a little at a time, and discover just what you can do with that. As a start, get a camera with a standard 50 mm. or 55 mm. lens capable of focussing down to 18 in. or closer, a fairly cheap electronic flash, a 10 ft. or greater flash lead, and a good tripod. Then perhaps obtain a set of extension tubes for close-up work. A bit later a 135 mm. telephoto lens and a second set of tubes (much cheaper than a bellows and handier for photographing fish). Eventually a second, more powerful flash, another extension lead and a two-way adaptor. A sensitive light-meter is also useful if any amount of daylight work is to be done. You will also have to invent little gadgets of your own, such as a clamp to keep the flash in the right position, if you want to make your work easier.

Remember that practice makes perfect, and be prepared to use plenty of film to get the results you want: if you get as many as two or three really good shots from a 36-exposure roll of film then you are doing pretty well. Above all, one needs patience; it can take 3 or 4 hours to get a series of shots of just one fish, so don't think you can rush things. Fish are rarely obliging in this respect, but it does make those first-rate photographs all the more pleasing to look at.

Brocaded Fancy Carp of Japan

By FRANK ORME

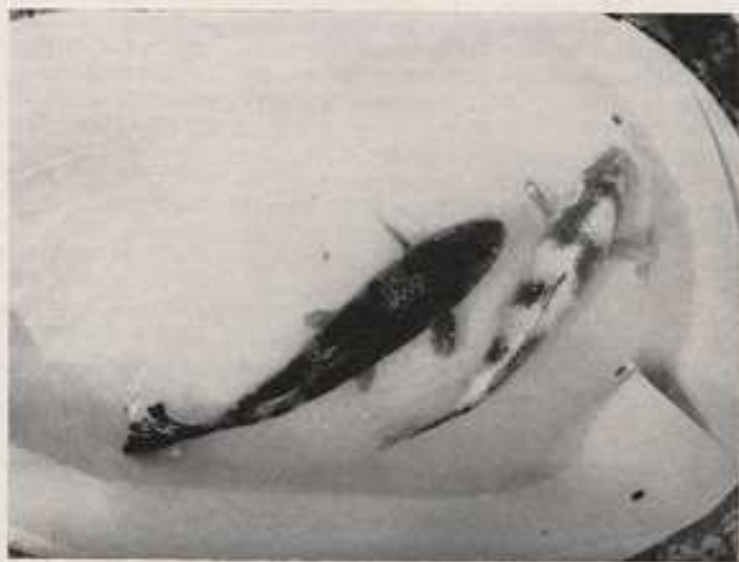
KOI are the largest of the coldwater fishes normally kept by aquarists, and as such require plenty of growing space in which to develop. Although young specimens may be kept for a time in tanks, they should, ideally, be housed in a pond if they are to attain their full size of up to 2 feet or so.

Differing from the wild carp (*Cyprinus carpio*) only in colour and scale pattern, the koi (or goi, which is Japanese for carp), is a comparatively recent introduction to the western world, but it has quickly attracted a large following and many of these enthusiasts soon find themselves becoming members of the British Koi-Keepers Society — a national society that has links with the All Japan Koi-Keepers Society.

Nishiki goi (brocaded carp) were originally the pets of the Japanese nobility who were centred mainly in the ancient

capital — Kyoto. After the 1868 Meiji Restoration, however, the fish became much more widely kept, especially by farmers. During the Grand Exhibition of 1914, held in Tokyo's Ueno Park, a number of these colourful fish were displayed publicly and it was at that time that they were given the name of nishiki goi. The demand for koi was so great that professional breeders began to raise them and breed even more colourful strains. The main koi-producing areas became established in such places as Niigata, Koriyama, Hiroshima and Yamaguchi.

Apart from the fully scaled form, koi can also be of the mirror carp type with a few irregularly spaced scales, or of leather carp type, which has no scales. The mirror and leather carp are considered to be of German origin and are, therefore, in Japanese called Doitsu. An albino or semi-white variety with red eyes



Koi are ideal pond fish since their full beauty is readily appreciated when they are seen from above. Two distinct colour patterns are shown: the orange and black Ki-utsuri (left) and blue and white Shiro bekko (right)

is known as the Akame. The colours are roughly divided into two groups: the self-coloured, or monotone, in which there is only one colour, and the patterned or multi-coloured (brocaded) carp, these having two or more colours.

Although no two-patterned carp are identical, the Japanese have, nevertheless, given names to the various well-known colour patterns and these terms are used by Western koi keepers, for example: Shori Muji: all white; Aka Muji: all red; Ki Goi: yellow; Cha Goi: brown; Assagi: blue; Ogon: Golden; Orenji Ogon: orange; Purachina Ogon: platinum (a feature of the Ogon varieties is the glittering scales); Kohako: white with red areas; Shiro Bekko: white with black spots; Aka Bekko: red with black spots; Showa Sanke: black with red and white areas; Taisho Sanke: white with red and black.

If a success is to be made of keeping koi it is essential that as large a pool as possible be provided. These fish will never reach their full size, or colour potential, if restricted to spending life in a tank. The ideal pool should vary in depth from about 18 inches to around 3 feet in the deepest section. A large water surface area is required that will allow a minimum of 10 feet straight swim. Preferably where space allows, double the swim could well be provided and it would still not be too little. A pool of, say, 10 feet by 10 feet would accommodate only three or four large koi!

In order to calculate the number of fish suitable for a given pool, to avoid overcrowding and allow for growth, a safe basis is 1 inch of fish to every 2 square feet of water surface area.

Like all of the carp family, koi like continually to grub in the mulm for the odd scraps of food; therefore it is almost certain that any submerged plants will be quickly uprooted, and possibly eaten, unless they have a very strong root system to keep them firmly anchored. In this respect the water lily is ideal, provided it is allowed sufficient time to develop a good root system or, alternatively, held in place with bricks.

The beauty of koi lies in their bright coloration and if the patterns are to be appreciated it is necessary that the water should be kept clear. Owing to the habit of grubbing and the amount of excretion from such large fish it is no easy task to

preserve this desired state of water clarity. To overcome the problem of excessive sediment and green water various systems of undergravel filtration and/or water exchange have been developed by koi enthusiasts (one was described in the January, 1975 issue of PFM, copies of which are still available). If the system is well thought out, and operates efficiently, it will allow fish to be seen quite clearly in the deepest areas of the water.

Normally, the koi should cause no health problems, if they are maintained correctly. Unfortunately, many losses are experienced with newly acquired fish, which are nearly always imported stock. For this reason only healthy-appearing fish should be purchased and these should then be given a period of quarantine, during which they can be carefully fed and nurtured into condition before they are allowed to join any other fish. With time these problems of health will be overcome as home-bred stock becomes more widely available, for British breeders are learning the secrets.

The feeding of koi follows the same pattern as for goldfish: give plenty of green food and regular feeding with live foods. Carp are not fussy eaters and will accept practically anything and everything that is offered. Suit the size of food to the size of the fish — small food will quite often be ignored by large fish as they go for the bigger pieces.

Temperamentally, koi have a placid, peaceful nature; they will not unduly bully their smaller kin but, bear in mind, if other fish are small enough to eat — eaten they will be, as another form of live food. From this it will be realised that, if the fish should spawn, not many fry would survive. The solution is to remove the eggs either to a hatching and rearing pool or to tanks, where they can be raised to a size that ensures their safety when they join the adults.

These are the ideal fish for the person who likes big brightly coloured pets that are easily tameable, but the owner must have the space available, and be willing, to provide the spacious quarters that they require.

Details of the British Koi-Keepers Society can be obtained by writing to the secretary, at 137 Gayfield Avenue, Brierly Hill, Staffs., DY5 2BX; send a self-addressed and stamped envelope.

GUPPY BREEDING

Complications of Colour

By FRED CAMPBELL

IN the days when the little fish which we now know as the guppy was making its impact on the minds of the world's biologists, its unique attributes resulted in it being referred to by a variety of popular names. 'Mosquito fish' because of its voracious appetite for mosquito larvae and its use in the control of malaria; 'millions fish' on account of its remarkable rate of reproduction; and 'rainbow fish' from the kaleidoscopic picture presented by the colourful males.

Whatever developments have taken place over the years the enhancement of colour patterns must take pride of place and the modern breeder, as he takes stock of the 'reds', 'blues', 'greens', 'half-blacks', 'cobras' etc., can have little doubt that 'rainbow fish' was an apt choice.

Unlike the U.K. specialists, the Americans and Asians have exploited the guppy's propensity for generative colour, spreading it over a wide expanse of caudal fin and, for show purposes, segregating their specimens into colour classes. The trend has spread to this country and the manner in which the various colour traits are transmitted in the process of inheritance is becoming more and more the main subject of discussion in guppy-breeding circles.

It is a subject which can be both fascinating and frustrating, dependent upon the temperament of the individual, for the location of the units of inheritance, called genes, can produce such diverse results that all but the most dedicated may become disenchanted. It is therefore necessary that all experiments be logged and the method used is, again, very much in the hands of the individual. I have previously dealt with the basic body colours and will now endeavour to simplify the complications encountered when superimposing secondary patterns.

Secondary colour traits may be sex-linked, that is to say they are located on

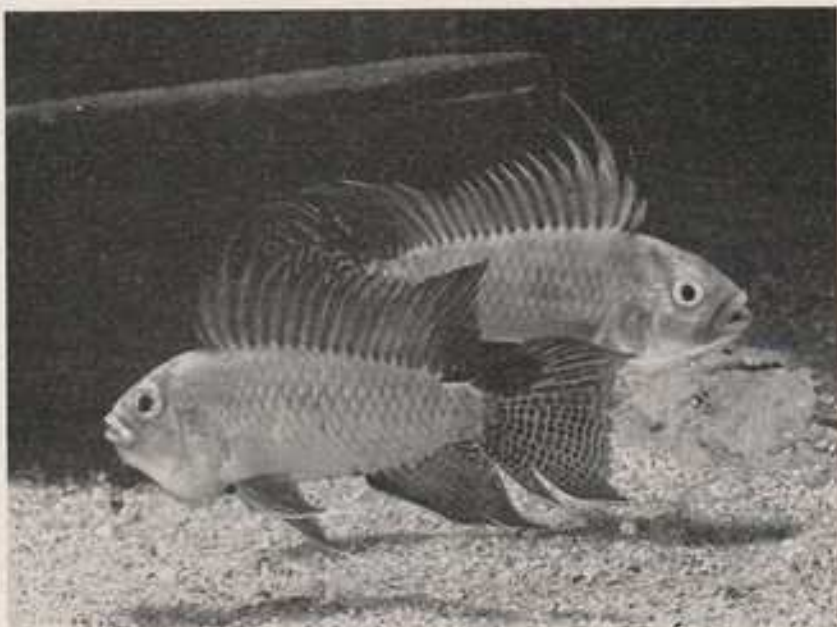
the chromosomes which determine whether the offspring are to be male or female. Or they may be located on the autosomes (these are the chromosomes which have no bearing on sex). It is the sex-linked traits which present the most problems to the breeder. Some are passed straight down the male line and are always visible; some are transmitted from the male to his daughters only, who do not display them; males only may inherit traits which the mother does not display so it is necessary to know what the female is carrying before mating. Autosomal traits do not present quite the same problems. They are passed to both male and female offspring and if they are dominant will be displayed. They can, of course, be recessive, in which case they will be apparent only in the second generation.

Let us then prepare a summary as to what we need to discover as we progress towards the ultimate establishment of a true-breeding strain. It is always the males which attract people to guppy-breeding, so first of all we must have in our minds a clear picture of our ideal male. Then we need to find out whether the desirable traits are autosomal or whether they are sex-linked. If autosomal, whether they are dominant or recessive. If sex-linked, whether the gene we are interested in is on the Y chromosome or the X chromosome. Y-linked genes are expressed in the sons, X-linked genes can only be passed to the daughters and are not expressed.

Unfortunately no hard and fast rules can be laid down and it is up to the individual to discover the peculiarities of his own particular stock. It is generally accepted that the half-black and snakeskin patterns are sex-linked, but variations occur between X and Y. Such variations

Continued on page 329

Spawning of a Dwarf Cichlid



Apistogramma borelli

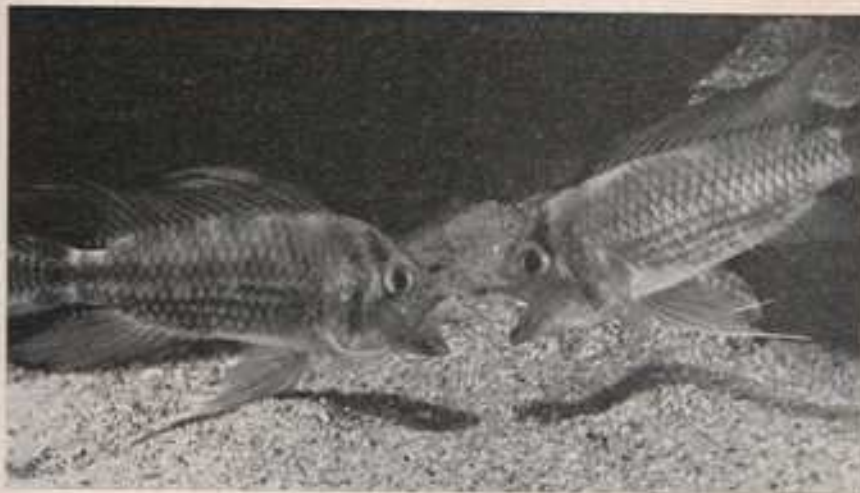
THIS small, peace-loving cichlid was imported for the first time into Europe in 1936 from South America — from the Matto Grosso, River Paraguay and southwards as far as the Argentine. It is a very attractive, rather shy, fish that is only infrequently kept in our aquaria. The female is unpretentiously coloured and does not have the long fins that the male has, but the male is a handsome dark-brown fish, with a beautiful blue shimmer along the sides of its body. Dorsal, anal and ventral fins are a delicate blue with dark borders, often tipped with white. The soft parts of the dorsal and anal fins are sometimes spotted blue-green and the ventral fin is yellowish. The colouring of both the male and female fish can alter considerably. During spawning display and fighting between rivals the male's colour darkens and becomes more intense. Also at spawning time the female can become a deep yellow colour with black diagonal stripes.

The male grows to about 2½ in. (17 cm.), and the female stays considerably smaller; as they do not reach a very great length they can be kept in a medium-sized tank and, since they are placid and sociable, with other

By RUDOLPH ZUKAL

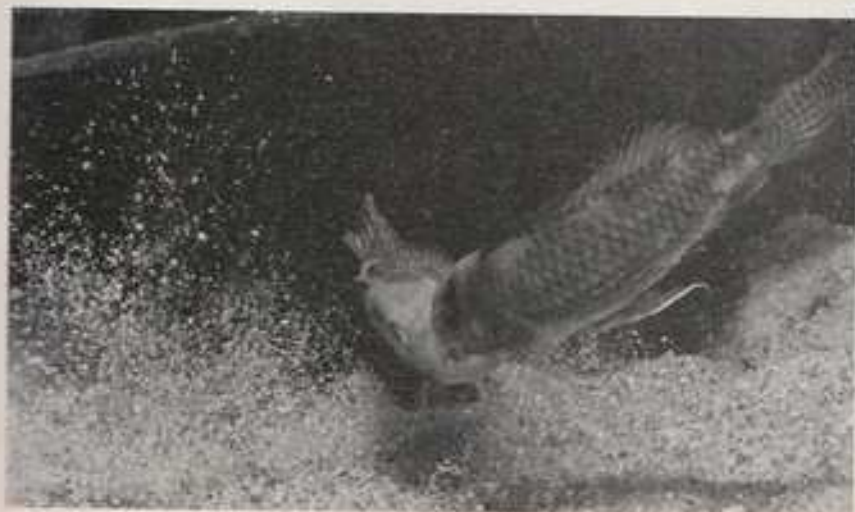
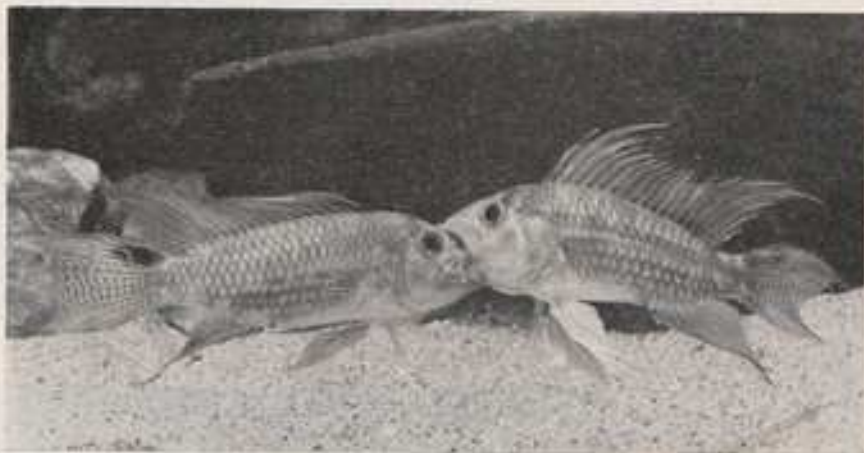
Photographs by the author

Translated by F. MARSH

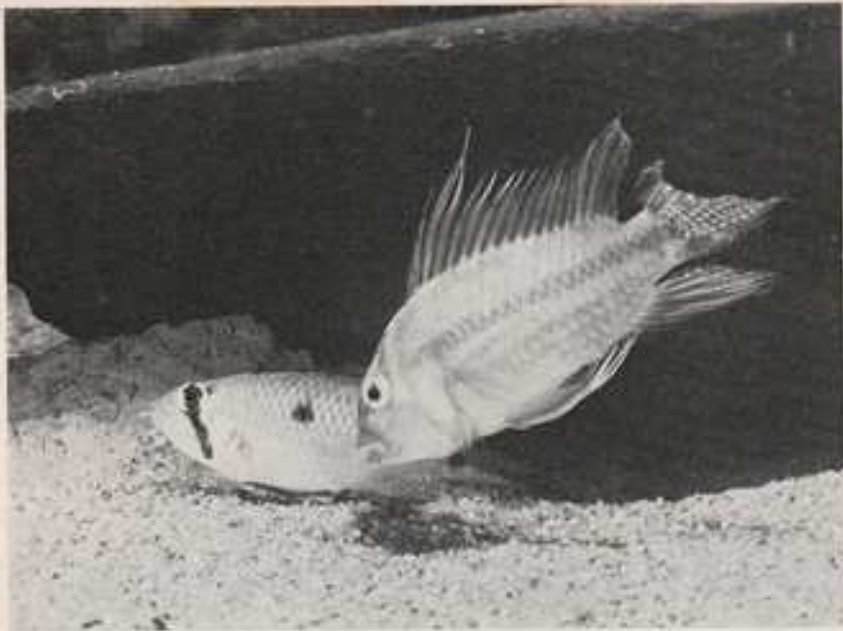


Normally peaceable, males of this species fight vigorously in contests for territory and females. Two males, seen in the photograph on the preceding page in aggressive display, prepare for the contest with jaws apart, gill covers distended and darkened coloration

After the threats made posturally the rival males lock their jaws and the tugging, tossing and pushing begins



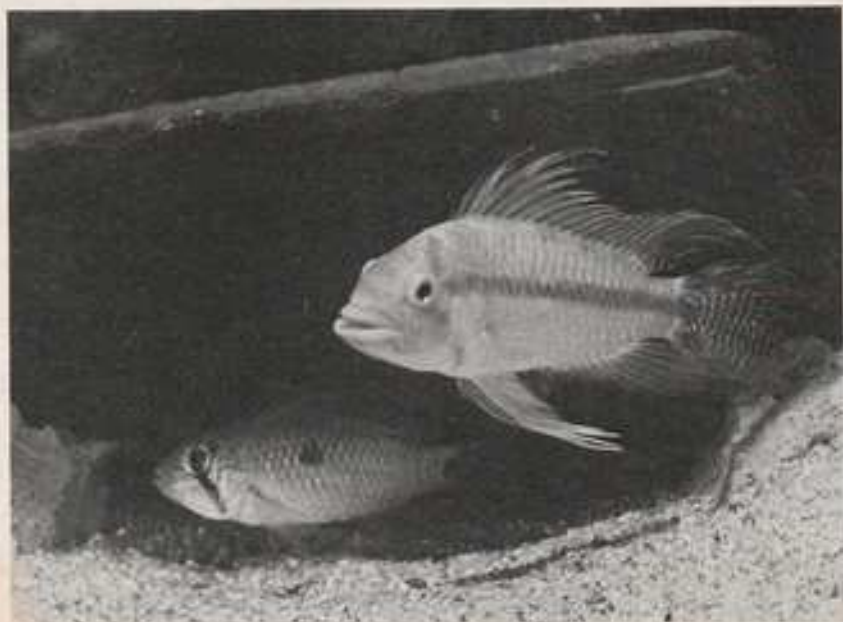
As the contest reaches its peak the stronger male has his opponent on the gravel, which swirls into the water with the strength of the fish's struggles



Courting of the female by the male victor in the contest depicted in preceding pictures. Gentle butting of the female's side appears to be an effective stimulatory manoeuvre.

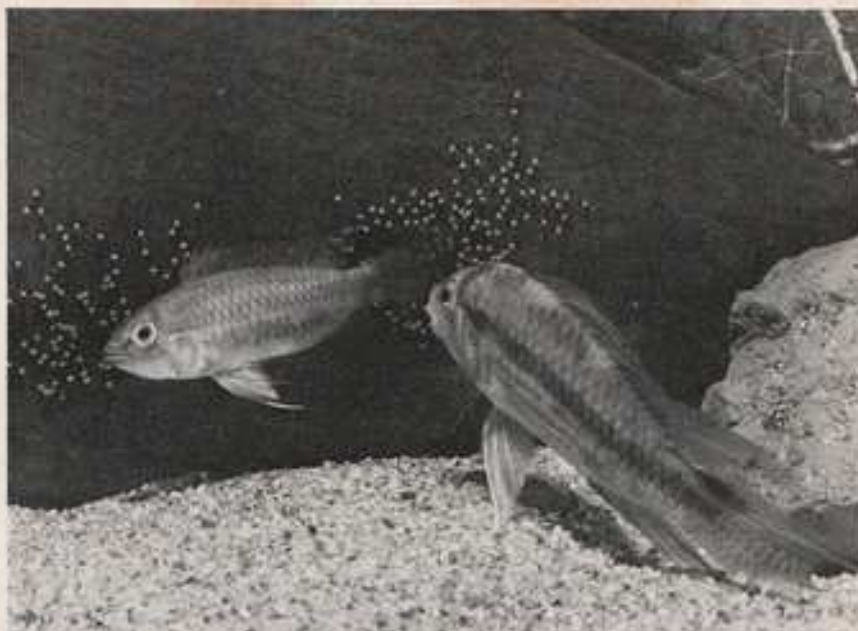
peaceable fishes. They are quite shy in the community tank and tend to move very little. As they live largely in hiding the tank must be richly planted (they do not burrow except at spawning time) and well lighted and if they are to be kept with a community of their own species there

must be plenty of hiding places for them to utilise, as not only the male but also the female will defend its territory viciously. These cichlids are rather susceptible to falls in temperature — they need warmth and the temperature must not go below 72°F (22°C). The water



A spawning site has been selected and the male keeps protectively in front of his mate as she hovers against the inclined rock.

Between 50 and 150 eggs are deposited at a spawning and after these have been fertilised by the male he is soon driven away from the area by the female, who guards the eggs and raises her brood alone



should preferably be soft, slightly acid, not too 'old' and well ventilated. They do not take kindly to chemicals in their tank or to sudden changes of water, and they require a diet of live foods. In short, these fish are not for everyone — to keep and breed them requires at least some degree of experience.

Propagation is similar to that of most cichlids. The fish spawn in holes, on a firm base, or even on the leaf of a plant. When the spawning takes place the female lays several brownish eggs, while the male watches closely. To lay the eggs the female turns her belly to the spawning site, as do all the other species of the *Apistogramma* genus. While she does this the male first takes up a slanting position. His whole body then quivers slightly and the milt is ejected. Since this is lighter

than water it rises up to the eggs and it is then that fertilisation of them takes place.

The fry hatch after 3 days and are looked after by the female in indentations in the gravel that she has prepared. The male must be removed after the spawning — otherwise he will be rammed and bitten by his small partner. Take care that the fish are not disturbed either during the spawning itself or while the eggs and fry are being looked after, since the mother's anxiety can cause her to destroy the eggs or even the hatched fry. It is a good idea to darken the spawning tank a little.

Once the fry are free-swimming they may be fed with the finest live foods. After 14 days the female herself can be removed. It is interesting to note that a spawning always gives more males than females.

Complications of Colour

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are usually noted when the colour pattern is produced in conjunction with a certain finnage shape. Similarly, secondary colours like red, blue and green may be

due to autosomal genes or they may be sex-linked, particularly when allied to a certain caudal shape.

It will be evident, therefore, that guppy-breeding is no hit-or-miss occupation. Recording of the results of all matings is essential and a knowledge of the genetical make-up of females, who do not reveal all the inheritable factors they are carrying, is most important.

British Aquarists' Festival at Belle Vue

Reported by FRED CAMPBELL

Aquarists' Festival, organised by the Federation of Northern Aquarium Societies, was staged in the huge exhibition hall at Belle Vue, Manchester, which was once again transformed into a veritable wonderland to delight specialist and layman alike. The ingenuity of the societies in constructing their displays ranged through the whole concept of life, from stark reality to the realms of fantasy. Innumerable trade stands offered anything and everything, indispensable or otherwise, to the zealous fishkeeper.

The tremendous popularity of this annual exhibition was once again emphasised by the distance societies are prepared to travel for the privilege of competing. Societies from Lancashire, Yorkshire and Cheshire predominated as one would expect, but the midlands, Scotland, the north-east and the southern counties were also represented.

Many groups who specialise in the breeding and culture of one particular species were in evidence. The Fancy Guppy

Association came up with the original idea of fashioning their stand in the shape of a guppy — not an easy project. The British Killifish Association had around 36 tanks on view and, as usual, swept the board in the classes for egg laying tooth-carp. The Northern Goldfish and Pondkeepers Society displayed a comprehensive selection of coldwater species and enjoyed considerable success. The British Koi Keepers Society showed twin ponds containing a wide variety of these increasingly popular and colourful fish.

The special prize of £50 for the most attractive stand went to Northwich & DAS, who transported us through a tent opening into an Arabian Nights atmosphere. The tanks containing the 'living jewels' appeared to be treasure chests overflowing with precious stones and gems of every description, spilling on to the floor, which was littered with 'golden' coins, strings of pearls and all manner of riches.

Castleford AS was awarded

second prize for a Moon Landing Craft. This was particularly praiseworthy for the realistic effect which was achieved for very little financial outlay. It was constructed of plywood and plastic piping and generous use was made of bottles which had once contained washing-up liquid. Finished with a coating of silver paint, it looked the real thing. It is to be presented in its entirety, including tanks and fish, to a home for disabled children at Harrogate.

Lanarkshire AS presented a giant vacuum cleaner, which, although it didn't make a 'clean sweep', justified the long journey by obtaining third place. The animal theme favoured by Osram AS last year was again exploited, this time in the form of four reindeer drawing a sled loaded with Christmas presents and driven by a life-like Santa Claus.

The Champion of Champions contest consisting of fishes which had all won best in show awards was won by Mr V. Davison of Northumbrian Aquarists with a lemon fin barb; second was Mr P. J. Whelan (Blackburn) with a *Cichlasoma citrinellum*; third was Mr D. Fleet (Billingham) with a discus.

For the second year running the exhibitor gaining most awards was Mr B. M. Rothwell of the Northern Goldfish and Pondkeepers Society.

BAF Results

Best Fish of the Show (Withy Grove Press trophy): Mr R. Tomkinson (Glossop, *Osteochelonus hasselti*, 88); also Best Tropical Fish. Best Coldwater fish (Belle Vue trophy): Mr & Mrs K. Blades (Basset Law, pumpkinseed, 77). Best Other than Best Fish in Show, tropical egg-layers, Mr P. Batchelor (Loynes, 82); tropical livebearers, Mr A. Dawson (Heywood, 77); coldwater, Mr & Mrs K. Blades (Basset Law, 77).

Society furnished aquaria 1A (Cussons trophy): 1, Bury (74); 2, Northumbrian (73); 3, Northwich (63). 1B: 1, Northwich (69); 2, Bury (58); 3, NGPS (55). Best tropical individual furnished aquaria (Walter Smith Coronation shield): 1, Mrs S. Glee (Bury, 77); 2, Mr J. Robertson (Northumbrian, 75); 3, Mr

A. Vassiere (Merseyside, 67). Best coldwater individual furnished aquaria (Hammond trophy): 1, Mr A. Mills (Bury, 63); 2, Mr D. J. Thorne (Northwich, 61); 3, Mr R. Wagstaffe (NGPS, 51). Best aquascapes (Challenge trophy): 1, Mr B. Wilson (Merseyside, 72); 2, Mr H. Penhall (Osram, 70); 3, Mr B. Clift (Middletown, 51). Novelty aquascapes (J. Kelly trophy): 1, Mr H. Haslam (Belle Vue, 70); 2, Mr S. Seymour (Merseyside, 66); 3, Mr E. Seymour (Merseyside, 64).

Common goldfish and comets (E. Lancs. Society Trustees trophy): 1, Mr L. Baxter (NGPS, 71); 2, Mr H. Penhall (Osram, 70); 3, Mr & Mrs Wolstenholme (Blackburn, 59). Shubunkins (N.W. Branch of GSGS trophy): 1, 2 & 3, Mr B. M. Rothwell (NGPS, 70, 67, 65). Moors (Nottingham shield): 1 & 2, Mr W. H. Ramsden (NGPS, 70, 69); 3, Mr C. Wallbank (Blackburn, 68). Veiltails

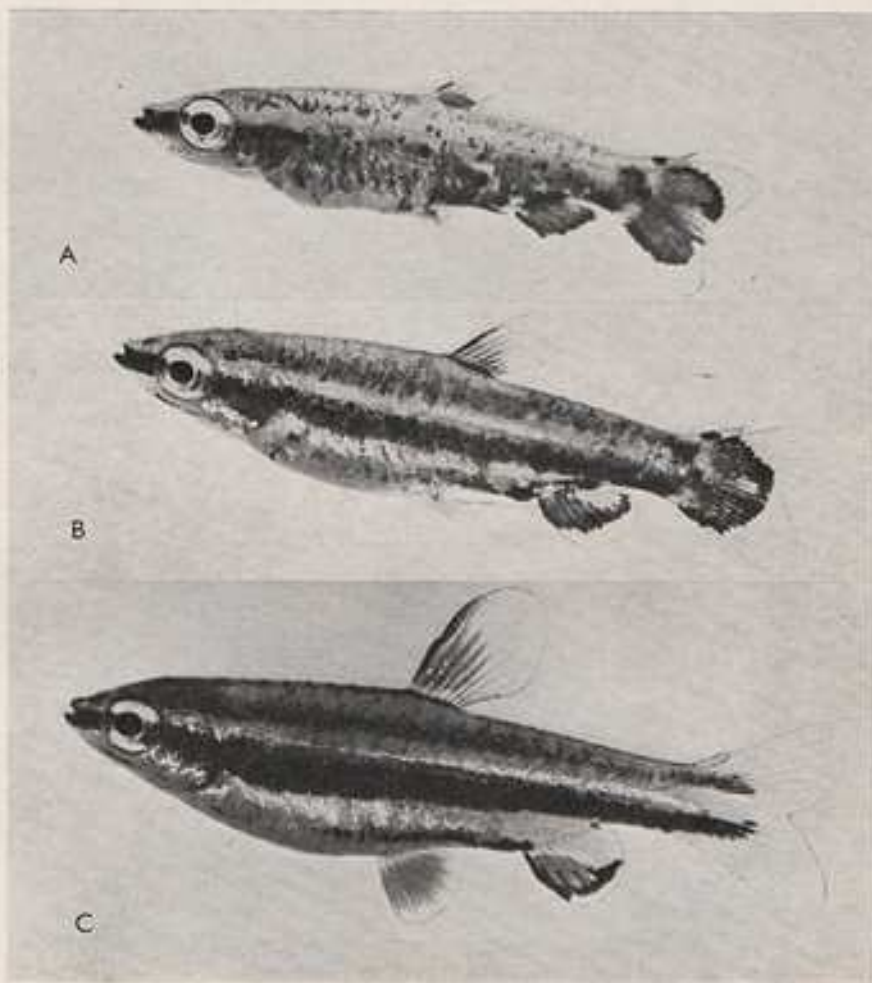
(Walter Smith trophy): 1, Mr B. M. Rothwell (NGPS, 73); 2, Mr R. Rich (Basingstoke, 65); 3, Mr W. Ramsden (NGPS, 61). avo Fancy goldfish (Chester shield): 1, Mr J. S. Hall (Aireboro, 72); 2, Mr H. Penhall (Osram, 69); 3, Mr W. H. Ramsden (NGPS, 68). Any species coldwater fish (Derby shield): 1, Mr & Mrs K. Blades (77); 2, Mr H. Penhall (65); 3, Mr J. S. Hall (59).

Best Guppy, av single fish (FNAS trophy): 1, Mr A. Dawson (Heywood, 77); 2 & 3, Mr J. Hutchings (FGA, 71, 67). Guppy pairs (Harrogate AS trophy): 1, Mr S. Richardson (Lanarkshire, 62); 2, Mr & Mrs Poulton (Northwich, 61); 3, Mr J. Hutchings (FGA, 59). Livebearers, av single fish (FNAS trophy): 1, Mr J. Robertson (Northumbrian, 71); 2, Mr & Mrs Muckle (Sandgrounders, 68); 3, Mr S. Richardson (Lanarkshire, 66). Livebearers avo pairs (A. Fraser-Brunner

Continued on page 335

Breeding and Development of the

DWARF PENCIL FISH



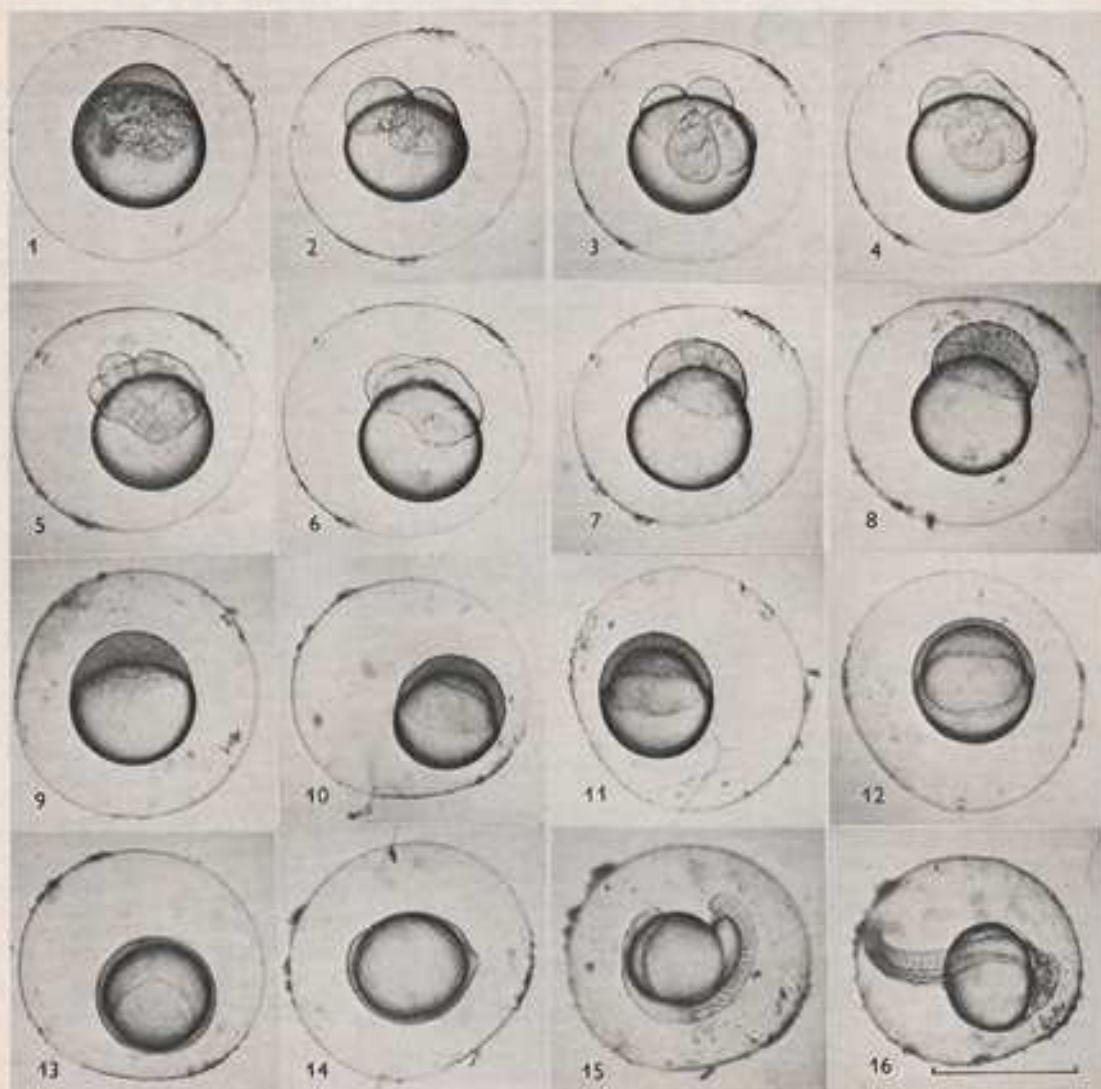
Young specimens of *Nannostomus marginatus* showing development of colour in the dwarf pencil fish: A, 2-3 weeks of age; B, about 25 days old; C, 5-6 weeks of age

Photo:
M. Chvojka

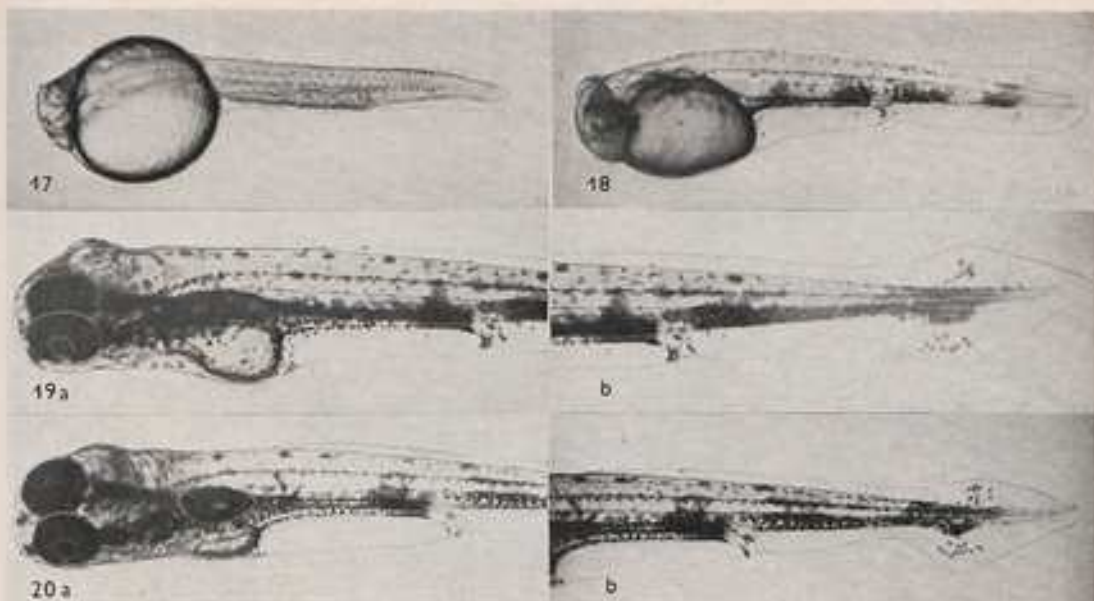
By S. FRANK

THE South American fishes of the genus *Nannostomus* are relatively small with elongated bodies slightly flattened at the sides. Their well-being in the aquarium seems to depend above all on the quality of the water. It must always be clear, well aerated and kept at temperatures in the range 77-82°F (25-28°C). All species prefer small, live organisms to eat such

Early development of the dwarf pencil fish



Development was recorded and photographed at a water temperature of 77-79°F (25-26°C). All times are given from the time of egg laying. 1, Fertilised egg (10 minutes), one cell stage. 2 (25-30 minutes) and 3 (35-45 minutes) show the two and four cell stages of the embryo within the egg. 4 to 6, eight, 16 and 32 cell stages at 50-55 minutes, 60 minutes and 70-75 minutes respectively. The yolk of the egg is bounded by a dark ring in all the pictures. With further cell divisions, shown in 7 (110 minutes) and 8 (2 hours 45 minutes), the advanced stage shown in 9 (5 hours) is reached. 10 (6 hours), 11 (6 hours 30 minutes), 12 (7 hours) and 13 (8 hours 30 minutes) show enlargement of the embryo until in picture 14 (11 hours) it begins to extend beyond the yolk sac, and then grows around it (15, 17 hours). The developing head is to the right and the back of the larva is clearly segmented. 16 (23 hours), larva ready to leave the egg case: the line beneath picture 16 represents 1 millimetre length (Microphotographs by S. Frank)



At 25 hours (picture 17) the newly hatched larva is 2.4 mm long and without pigment; it has large adhesive glands at the top. At 68 hours (picture 18) pigment cells develop and spread, particularly on the underside (length 3.3 mm). 19 (97 hours, length 4.2 mm): a, head end showing small almost depleted yolk sac; b, tail end showing black flecks in the developing caudal fin. 20 (118 hours, length 4.3 mm), free level-swimming and feeding fry: a, forepart showing filled swimbladder; b, tail end (Microphotographs by S. Frank)

as water fleas and cyclops but they will also enjoy the bottom creatures like small or finely chopped tubifex and white worms. With good feeding, pairs of these types of fishes can be put to spawn one after the other at intervals of 2 to 4 days. The young fish grow quite fast. They do, incidentally, often carry quite a different coloration from that which they finally reach as adult fish.

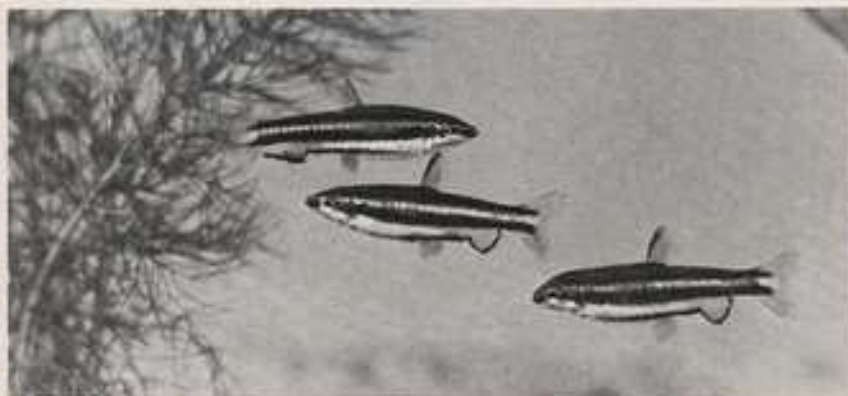
The most popular of the genus is the dwarf pencil fish, *Nannostomus marginatus*, that comes from Surinam and West Guyana and grows to only 1½ in. (4 cm.). This very lively species is, unfortunately, not very productive. The breeding tank should be quite small; one of about ½-gallon (3 litres) capacity will do, containing fine feathery water plants. The best spawning water should have a pH value of from 6.4 to 6.7 at about 3-7° general hardness, German scale (at the most 0.5° carbonate hardness, German). In other respects the spawning is similar to that of the golden pencil fish *N. beckfordi*, though the female's pugnacity in the presence of her eggs is enormous and quite astonishing.

Much has already been written about the spawning and care of the eggs in the aquarium and every breeder has his own, slightly different, methods. I myself divide the glass tank into two with a vertical sheet of glass and into each half I put a bunch of water plants. When the fish, after a while, have spawned in one half the glass sheet can be lifted up and the spawning pair chased into the other half of the tank by means of a glass rod and left there to spawn again in due course. It can even be arranged that the dividing glass sheet is raised and, with the aid of the glass rods, the bunch of plants, with the sticky eggs adhering to it, can be moved into the first half of the tank. The spawning pair are then given a fresh bunch of plants. This can be repeated over and over again until one half of the tank is full of water plants with the fish eggs on them. In this way I have obtained more than 50 young fish from one pair in a spawning (it has to be a fruitful male and female), and this is a very good result for this particular species.

The eggs quickly swell and reach a size, in cross section, of 1.80 (1.60-2.00) mm.

Hatching takes place in water at 79°F (26°C) after 25 hours and the fry are 2.40 (2.30–2.55) mm. long. Water temperature must not fall below 68°F (20°C). After 120 hours the young fish are free-swim-

ming and their swim bladders fill up. By now they are 4.30 (4.15–4.40) mm. long. They are not choosy about their food and from the beginning will vigorously eat largish cyclops or even brine shrimp.



Three adult males of *Nannostomus marginatus* (the anal fin is rounded with a black border)

Photo: M. Chvojka

Coldwater Scene

continued from page 317

have received this treatment appear to emerge from the winter in a more vigorous condition than those which have been kept warm.

A good many breeders have, over the past 2 years, complained of difficulty in getting their fish into breeding condition. The blame can be attributed almost entirely, in my opinion, to the preceding mild winters! Fish which remain active and continue to feed throughout the year tend to become fat and lazy, although they will continue to make growth. Although this state of continuous growth is the aim of some aquarists, I much prefer my fish to make their growth during the natural growing period of the warm months, followed by a winter rest.

In order to ensure the well being of the fish during the winter, both pool and tanks must be maintained in a reasonably clean state. Equally essential, however, is the pre-conditioning of the fish by providing plenty of good nourishing food at frequent intervals. Care must be taken not to over-feed and possibly cause the water to become polluted. With food offered in suffi-

cient small quantities, the fat reserves will be built up until the time, when the water temperature drops to 40°F (4°C), all feeding ceases. From this stage until the temperature rise, the body fat will sustain the fish, generally, throughout the hardest winter.

With regard to the cold — this will not usually have any ill effect upon the fish but, if kept in tanks that are liable to freeze, precautions must be taken to prevent broken glass, due to ice pressure. In my own fish house this is taken care of by an electric greenhouse-type fan heater which is linked to a thermostat. Set to switch on at just below freezing point, and off at just over, the heater ensures that heavy ice is avoided, although I have had up to a quarter inch of ice form on the water surfaces. I can assure readers that even under these conditions the fish came to no harm.

From a breeder's point of view, these harsh conditions may, in the early days, reveal weakness — such as swim-bladder trouble, but over a period of time these problem fish will be mostly eliminated. My view is that it is better that these weak fish should be discovered before I use them for breeding; after all, it is better to lose a few fish than breed the weakness into the strain.

BAF Results

continued from page 330

Cup): 1. Mr J. Robertson (Northumbrian, 68); 2. D. & P. Birdsall (Aireboro, 87); 3. Mrs J. Beavers (Hartlepool, 60).

Angels av single fish (FNAS trophy): 1. Mr K. Davies (Northwich, 73); 2. Mr A. Dawson (Haywood, 67); 3. Mr & Mrs K. Ellis (Basset Law, 66). Angel pairs av (Whitwell & Smykala Cup): 1. Mrs B. Newall (Glossop, 59); 2. Mr & Mrs Greenhalgh (Bury, 58); 3. Mr & Mrs P. Bull (Basset Law, 50). Dwarf cichlids, single fish (FNAS trophy): 1. Mr & Mrs Chester (Retford, 77); 2. Mr R. Walton (Hartlepool, 71); 3. Mr & Mrs Agar (Aireborough, 70). Dwarf cichlids pair (Lancaster trophy): 1. Mr P. Wolstenholme (Middleton, 62); 2. Mr & Mrs McBride (Aireboro, 59); 3. Mr E. Brown (Blackburn, 58). Cichlids av single fish (FNAS trophy): 1. Mr P. Batchelor (Loyne, 82); 2. Mr R. Atherton (Hartlepool, 80); 3. Mr G. Brown (Northumbrian, 75). Cichlids pair (National AS Cup): 1. Mr R. Atherton (72); 2. Mr S. Wolstenholme (Heywood, 66); 3. Mr J. Brook (Hodderfield, 54).

Fighters (E. Lancs Society Trustees trophy): 1. Mr R. Payne (Merseyside, 76); 2. Mr T. Davies (Heywood, 67); 3. Mr & Mrs Chester (Retford, 65). Gouramis av and paradise single fish (FNAS trophy): 1. Mr J. Taylor (Merseyside, 74); 2. Mr & Mrs Blades (69); 3. Mr & Mrs Newton (Blackburn, 68). Gouramis av and paradise

pairs (FNAS trophy): 1. Mr R. Tomkinson (Glossop, 74); 2. Mr G. Walker (Castleford, 72); 3. Mr J. Taylor (67). Barbs av single fish (FNAS trophy): 1. Mr R. Tomkinson (88); 2. Mr R. Jenkinson (Huddersfield, 77); 3. Mr V. Davison (Northumbrian, 76). Barbs av pair (Challenge trophy): 1. Mr V. Davison (82); 2. Mr A. Vassiere (75); 3. Mr E. Holmes (Castleford, 71). Characins av single fish (FNAS trophy): 1. Mr J. Kirk (Castleford, 73); 2. Mr P. Whelan (Blackburn, 66); 3. Mr R. A. Johnson (Hyde, 65). Characin pairs (E. Lancs Society Cup): 1. Mr M. Strange (Basingstoke), 2. Mr & Mrs G. Muckle (69); 3. Mr R. A. Johnson (Hyde, 67).

Carps or minnows av single fish (FNAS trophy): 1. Mr & Mrs S. Copley (Doncaster, 67); 2. Mr J. S. Hall (Aireboro, 65); 3. Mr J. Kirk (Castleford, 64). Carp and minnow av pairs (Warwick trophy): 1. Mr T. Hope, 82); 2. Mr V. Davison (Northumbrian, 78); 3. Mr S. White (Retford, 76). Catfishes av single fish (FNAS trophy): 1. Mr J. Taylor (81); 2. Mr J. Robertson (77); 3. Mr N. Horrocks (Belle Vue, 73). Catfish av pairs (York trophy): 1. Mr & Mrs Emerson (Castleford, 66); 2. Mr S. Buckley (Bury, 58); 3. Mr B. Forest (Blackburn, 56). Egg-laying toothcarps av single fish (FNAS trophy): 1. Mr J. Allen (BKA, 89); 2. Mr L. Greenall (BKA, 85); 3. Mr B. Wiggins (BKA, 61). ETC av pairs (Challenge trophy): 1. Mr M. B. Fairclough (BKA, 66); 2. Mr L. Sunberg (BKA, 65); 3. Mr S. Barratt (BKA, 64). Loach av (Durham trophy): 1. Mr G. L. Danby (Hyde, 78); 2. Mr & Mrs Muckle (72); 3. Mr M. Duddley (Hartlepool, 71). av

other than above (Rose Bowl Leeds & DAS): 1. Mr E. Smith (Northumbrian, 79); 2. Mr P. Whelan (Blackburn, 75); 3. Mr R. Blight (Basingstoke, 65).

Breeders, egg-layers (St. Martins Basingstoke, 70); 2. Mr J. Buckley (Aquaria trophy); 1. Mr M. Strange (Northwich, 69); 3. Mr & Mrs Fletcher (Doncaster, 68). Breeders, egg-layers (FNAS trophy): 1. Mr F. Buxton (82); 2. Mr M. Strange (81); 3. Mr & Mrs Fletcher (74). Breeders, livebearers (FNAS trophy): 1. D. & P. Birdsall (Aireboro, 67); 2. Mr J. Hutchings (FGA, 84); 3. Mr W. Blundell (Doncaster, 63). Breeders, livebearers (FNAS trophy): 1. & 2. Mr M. Strange (Basingstoke); 3. Mr T. Horrocks (Oram, 70). Breeders, coldwater (Edgar Chapman Memorial trophy): 1. 2. & 3. Mr B. M. Rothwell (NGPS, 72, 67, 64). Plants av (Challenge trophy): 1. Mr A. Beasley (Bury, 72); 2. Mr M. Ross (Lanarkshire, 65); 3. Mr H. Penhall (Oram, 64). Marine furnished aquaria (FNAS trophy): 1. Mr A. Henshaw (Belle Vue, 69); 2. Mr D. Johnson (Blackburn, 59). Best marine fish single (R. Atherton Challenge shield): 1. Mr D. Buckley (77); 2. & 3. Mr K. Smith (Middleton, 72, 55).

Special prize for neatness of Society exhibits: 1. Northwich; 2. Castleford; 3. Lanarkshire. Best pair of fish (Bill Kelly Memorial trophy): Mr V. Davison (83). Exhibitor gaining most awards (John East Memorial trophy): Mr B. Rothwell (NGPS). Champion of Champions (best fish in Open Shows excluding Best Fish in BAF Final Contest): 1. Mr V. Davison; 2. Mr P. J. Whelan; 3. Mr D. Fleet.



TORBAY AS Open Show attracted some excellent entries out of the 338 benched and the success of the Show was much enhanced by displays featuring the S.W. Herpetological Society, the local BMAA, the Fairground Organ Preservation Society, Torquay Caged Bird Society and the Torbay National Cacti & Succulent Society, not forgetting a furnished tank 'Extravaganza' by vice-chairman Mr George Thompson 'Had to be seen to be believed', writes the Society's secretary. FBAS judges were Mr J. E. Wheeler, Mr R. Matley, Mr J. M. Jeffrey, Mr W. Ryder, Mr C. W. Gorwill, Mr D. S. Langdon and Mr L. Doubleday (BMAA Judge also). The Best Fish in Show award, gold pin and 'Most Popular Fish' was a blind cave fish entered by Mr M. Poole (Torbay). Other major awards were: Best

Guppy, C. & J. Richards, Sudbury; Best Livebearer, Mr C. Turner, *Platy variatus*, Cardiff; Best Coldwater, Mrs J. Griffiths, common goldfish, Torbay; Best Marine, Mr L. A. Wilkins, *Blenius pavo*, BMAA; Best Pair Livebearers, Mr T. Woolley, *Limia melanogaster*, Torbay; Best Shark, Mr R. Bond, *Labeo bicolor*, Yeovil AS; Best Junior entry, Miss A. Corner, *Pseudotropheus auratus*, Torbay.

B: 1. Mr N. Gray (Torbay, 79); 2. C. & J. Richards (Sudbury, 77); 3. Mr M. Carter (Southampton, 77). C: 1. Mr M. Poole (Torbay, 84); 2. Mr J. Woolley (Torbay, 83); 3. Mr J. Paul (Ilfracombe, 83). Ca: 1. & 3. Mr C. Turner (Cardiff, 79, 72); 2. Mr H. Chick (Llantwit Major, 76). D: 1. Mr B. Grant (Chard, 86); 2. Mr R. Taylor (Dorchester, 86); 3. Mr B. Riste (Chard, 86). Da: 1. Mr J. Wright (Chard, 71); 2. Mr J. J. Edwards (Llantwit Major, 68); 3. Mr F. Drman (Torbay, 65). Db: 1, 2, 3. Mr M. Carter (Southampton, 76, 74, 73). E: 1. & 2. Mr D. R. Waresant (Cardiff & Barry, 84, 83); 3. Mrs K. Paul (Ilfracombe, 82). Ea: 1. & 3. C. & J. Richards (Sudbury, 78, 75); 2. Mr M. Carter (75). F: 1. Mr J. Denning (Torbay, 71); 2. Mr R. Williams (Totnes, 70); 3. Mr M. Poole (70). G: 1. Mr R. Taylor (84); 2. Mr C. Turner (81); 3. Mr T. Woolley (Torbay, 80). H: 1. Mr M. Carter (75); 2. Miss A. Corner (Torbay, 74); 3. Mr M. Poole (73). J: 1. Mr C. Turner (80); 2. Mr J. F. Edwards (L. Major, 79); 3. Mr M. Poole (75). K: 1. C. & J.

Richards (79); 2. Mr J. J. Edwards (78); 3. Miss M. Paul (Ilfracombe, 78). L: 1. Mr A. Bligh (Ilfracombe, 78); 2. Mr R. Bond (Yeovil, 75); 3. Mr B. Riste (73). M: 1. Mr R. Bond (81); 2. C. Turner (80); 3. Mr H. Chick (L. Major, 78). N: 1. Mr C. Turner (85); 2. Mr T. Woolley (82); 3. Miss N. Paul (Ilfracombe, 81). O: 1. C. & J. Richards (79); 2. & 3. Mr J. Wright (Chard, 78, 77). P: C. & J. Richards (71); 2. & 3. Mr T. Woolley (68, 68). Q: Mrs J. Griffiths (Torbay, 68); 2. Mr T. Woolley (67); 3. Mr J. Davis (Torbay, 62). R: 1. Mr C. Turner (80); 2. Mr D. R. Waresant (79); 3. Mrs J. Griffiths (Torbay, 77). S: 1. Mr Woolley (74); 2. & 3. Mrs C. E. Vellacott (Taunton, 69, 67). T: 1. Mr M. Carter (75); 2. & 3. Mr C. Turner (73, 72).

Ua-d: 1. & 3. Mrs J. Griffiths (76, 74); 2. Mr G. Thompson (Torbay, 75). Ub & Uc: 1. & 3. Mrs J. Griffiths (78, 76); 2. Mr B. Speare (Bude, 77). V: 1. & 3. Mrs J. Griffiths (76, 72); 2. Mr B. M. Speare (73). W: 1. Mr B. Riste (82); 2. & 3. Mr G. Thompson (81, 78). Wa & Wc: 1. & 3. Mr G. Thompson (81, 74); 2. Mrs J. Griffiths (78). Xb-M: 1. & 3. Mr M. Poole (77, 75); 2. Mr C. Turner (76). XO-T: 1. Mr C. Turner (80); 2. Mr T. Woolley (77); 3. Mr M. Carter (76). XU-W: 1. 2. & 3. Mr T. Woolley (75, 67, 64). Ya: 1. 2. 3. Mr L. A. Wilkins (BMAA, 85, 78, 71). Yb: 1. & 3. Mr H. Parham (82, 76); 2. Mr L. A. Wilkins (81). Z: 1. & 2. Mr J. R. Davis (Torbay, 80, 79); 3. Mrs C. E. Vellacott.

AT their new venue, the Railway Club, MERTHYR AS entertained RHONDDA AS and drew in the knockout competi-

tion with the guests. (1, Mr M. Davies, Merthyr; 2 & 3, Mr K. Williams, Rhondda; 4, Mr E. Morgan, Merthyr). However, Rhondda won the quiz by 38 points to 27. Thanks are given to judge Mr C. Short of Newport and Mr R. Bob Purdy of North Gwent, the quizmaster who also devised the quiz. The club wish their president, Mr D. Waumont every success in his new venture, a tropical fish and pet shop in Salisbury Road, Cardiff.

RESULTS of the MIDLAND AQUARIST LEAGUE inter-society show in September are: (B; Bedworth; C, Coventry; G, Goodyers End; H, Hinckley; Le, Leamington; Lo, Loughborough; RF, Rugby Fishkeepers):

av Characin (section A): 1, Mr C. Pratt (B); 2 & 5, Mr & Mrs Chamblain (Le); 3, Mr F. Hirst (C); 4, Mr R. Tedda (B); 6, Mr I. Purdy (Lo). av Characin (section B): 1, Mr & Mrs Short (H); 2, Mr T. Parry (Lo); 3, Mr F. Hirst (C); 4, Mr C. Pratt (B); 5 & 6, Mr D. White (B). Goldfish, single tail: 1, Mr R. Hancox (C); 2 & 6, Mr D. Easingwood (C); 3 & 4, Mr B. Chittendon (Le); 5, Mr Ansell (R). Goldfish, twintail: 1 & 2, Mr D. Easingwood (C); 3 & 4, Mr R. Hancox (C); 5 & 6, Mr Ansell (R). Egg-layer pairs: 1, Mr G. Williams (R); 2, Mr F. Hirst (C); 3, Mr T. Parry (Lo); 4, Mr D. Tripp (Le); 5, Mr Michelson (G); 6, Mr D. White (B). Points for the Show: Coventry, 44; Leamington, 17; Bedworth, 16; Rugby, 11; Loughborough, 10; Hinckley, 6; Goodyers End, 2. The best in show award was made to Mr D. Easingwood (Coventry, 81 points) for a fantail goldfish.

... WITHOUT doubt the Tropical Fish Exhibition staged by **GREAT YARMOUTH & DAS** was their best ever. Despite the economic climate attendance was on a par with previous years but the interest and enthusiasm created was far greater. A stronger coldwater section helped to widen the field as did the newly introduced killi section. Already the Exhibition Committee are thinking of next year's Show — a prospect of a fixed venue from now on makes the signs look very hopeful.

THE Best Fish in Show award at the **HARLOW AS** Open Show went to Mr F. Farnell of Tonbridge. The **FBAS** trophy for **Class X (O-T)** was won by Mr

K. Usher (Doncaster).

(BG, Bethnal Green; Ch, Chingford; Do, Doncaster; Du, Dunmow; E, Ealing; H, Harlow; NK, North Kent; Ri, Riverside; Ro, Roehampton; Sa, Saracins; So, Southend; Su, Sudbury; T, Tonbridge; W, Walthamstow).

Aa, 1, Harlow; 2, Stevenage. Ak, 1, Miss Hill (W); 2, Mrs Taylor (H); 3, Mr P. Muddock (H). B: 1, Mrs Cruickshank (E); 2, Mr R. Thoday (Du); 3, Mr D. Hanman (Du). C: 1, Mr J. Stock (H); 2, Mr C. Saunders (H); 3, Mr Tilley (Sa). Ca: 1 & 2, Mr M. Clark (H); 3, Mr R. Thoday (Du). Db: 1, Mr P. Matthews (H); 2, Mr A. Noronha (NK); 3, Mr J. Stock (H). Dc: 1, Mr R. Plume (Sy); 2, Mrs M. Nethersell (R); 3, Mr G. Woodhams (T). E: 1, Mr P. Matthews (H); 2, Mr P. Garner (Sa); 3, Mr R. Keridge (H). Ez: 1, Mr P. Garner (Sa); 2, Mr J. Lambert (H); 3, Mr Fry (NK). F: 1, Mr C. Thomas (W); 2, Mr K. Usher (Do); 3, Mr R. Thoday (D). G: 1, Mr P. Farnell (T); 2, Mr R. Thoday; 3, Mr M. Nethersell. H: 1, Mr M. Nethersell; 2, Mr M. Williams (H); 3, Mr A. Noronha. J: 1, Mr P. Matthews; 2, Mr R. Thoday; 3, Mr S. Barford (Sa). K: 1, Mr R. Thoday; 2, Mr T. Leblond (Ro); 3, Mr C. McKay (Su). L: 1, Mr M. Williams; 2, Mr A. Noronha; 3, Mr P. Huckle (H). M: 1, Mrs S. Hedges (BG); 2, Mr Purchar (T); 3, Mr T. Cruickshank (E). NB-M: 1, Mr A. Noronha; 2, Mr T. Cruickshank; 3, Mr R. Thoday. NO-T: 1 & 3, Mr D. Cheswright (So); 2, Mr K. Usher (Do).

O: 1, Mr P. Hynes (H); 2, Mr A. Noronha; 3, Mr S. Mannings (Ro). P: 1, Mr M. Williams; 2, Mr B. Mannings; 3, Mr A. Noronha. Q: 1, Mr R. Thoday; 2, Mr K. Usher; 3, Mr A. Noronha. R: 1 & 2, Mr A. Noronha; 3, Mr K. Usher. S: 1, Mr R. Keridge (H); 2, Mr S. Jordan (H); 3, Mrs M. Nethersell. T: 1 & 3, Mr K. Usher; 2, Mr A. Noronha. W: 1, Mrs S. Hedges; 2, Mr J. Hughes (Ro); 3, Mr M. Williams. XB-M: 1, Mr A. Noronha; 2, Mrs Tilley (Sa); 3, Mr D. Cheswright (So). XO-T: 1 & 2, Mr K. Usher (Do); 3, Mr M. Clark (H).

MEMBERS of OLDHAM & DAS would like to thank all those who came along to their Annual Open Show and all who donated prizes and helped in any way to make this a successful show. The show was supported by 21 societies bringing along with them 386 entries. The Best Fish in Show award went to Mr S. Walsh of Accrington. The **FNAS** judges were Mr P. Moorhouse, Mr H. Cooper, Mr E. Ward and Mr P. Whelan.

Guppies: 1, M. & M. Poulton (Northwich); 2, Mr Axon (Ashton); 3, Mr C. Beckenham (Oldham). Mollies: 1, Mrs P. Ridley (Heywood); 2, Mr C. Beckenham; 3, Mr M. Baker. Sword-tails: 1, Mr C. Beckenham; 2, Mr K. J. Durham (Fallsforth); 3, Mr & Mrs N. Wilkinson (Oldham). Platys: 1, Mr K. Houghton (Southport); 2, Mr C. Evason (Sandgrounders); 3, Mr & Mrs Baldwin (Sandgrounders). av Livebearers: 1, Mr P. Walsh (Black-

burn); 2, Mr & Mrs Baldwin; 3, Mr Marshallisea (Blackburn).

Anabantids: 1, Mr & Mrs L. Newton (Blackburn); 2, Mr L. Hopkins; 3, Mr J. Taylor (Merseyside). Fighters: 1, 2 & 3, Mr T. Davies (Heywood). Small barb: 1, Mr J. Ridley; 2, Mr & Mrs Burgoyne (Farnworth); 3, Mr A. Chadwick (Oldham). Large barb: 1, Mr & Mrs W. Smith (Osram); 2, Mr W. Brown; 3, Mr C. Beckenham (Oldham). Dwarf cichlids: 1, Mr A. Chadwick; 2, Mr J. Bate (Sandgrounders); 3, Mr P. Wrench (Northwich). Large cichlids: 1, Mr S. Hooton (Sandgrounders); 2, Mr S. Ridley; 3, Mr S. Wolstenholme (Heywood). Angels: 1, K. & C. Davies; 2, Mr S. Harvey (Sandgrounders); 3, Mr W. Hayes (Loyne). Small characins: 1, Miss S. Goddard (Macclesfield); 2, P. & H. Batchelor; 3, Mr & Mrs R. Houghton. Large characins: 1, P. & H. Batchelor; 2, Mr & Mrs R. Houghton; 3, J. & G. Waterhouse. Rasboras: 1, J. & G. Waterhouse; 2, Mr & Mrs R. Houghton; 3, Mr O. P. Gardiner (Blackburn).

Danios & minnows: 1 & 2, Mr P. Walsh; 3, Mr P. Wrench (Northwich). Sharks: 1, Mr D. Avery (Merseyside); 2, Mr & Mrs R. Houghton; 3, Mr & Mrs Baldwin. Flying fishes: 1, J. & G. Waterhouse; 2, T. & J. Selby (Wathenshaw); 3, Mr O. P. Gardiner. Tooth-carp: 1, Mr & Mrs Marshallisea; 2, Mr D. Avery; 3, Mr A. Whittam (Nelson). Corydoras: 1, Mr J. Taylor; 2, Mr J. Tonge; 3, D. G. & S. Harvey. av Catfish: 1, D. & H. Hayes; 2, P. & H. Batchelor; 3, Mr & Mrs R. Houghton. Loaches & Gobies: 1, Mr & Mrs Marshallisea; 2, Mr & Mrs Burgoyne; 3, Mr & Mrs L. Newton.

Breeders egg-layers: 1-10: 1, Mr J. Ridley; 2, Mr D. Avery; 3, Mr Axon. Breeders egg-layers 11-20: 1, 2 & 3, Mr S. Wolstenholme. Breeders livebearers 1-10: 1, Mr & Mrs N. Wilkinson; 2, Mr K. Houghton (Southport); 3, Mr & Mrs Baldwin. Pairs egg-layers: 1, Miss A. Gregory (E. Lancs); 2, Mr & Mrs Marshallisea; 3, Mr & Mrs Burgoyne. Pairs livebearers: 1, Mr C. Evason; 2, M. & M. Poulton; 3, Mr & Mrs N. Wilkinson. av Tropical: 1, 2 & 3, P. & H. Batchelor. Fancy goldfish: 1 & 2, Mr S. Walsh; 3, Mr S. Foote. Common goldfish: 1 & 2, Mr & Mrs D. Wolstenholme; 3, Mr D. Harvey. av Coldwater: 1 & 3, Mr S. Dawson; 2, Mr G. Harvey. Mini jars furnished (no fish): 1 & 2, Mr E. Jones; 3, N. & M. Rimmer (Sandgrounders).

PORTSMOUTH AS report a very successful Open Show, well attended by members of the public. As well as the competitive classes there were also 11 exhibitions on display which created a great deal of interest. Mr J. Jupe won the Best Fish in Show award. The Taylor trophy — highest total points tropical, was won by Mr H. Armitage; a second Taylor trophy — highest total points coldwater, was won by Mr E. Binstead; and the A.V.T. trophy — highest total points club member, was won by Mr J. Stillwell.

Aeb: 1, Portsmouth AS. Richmond cup: 2, Carassius Club; 3, Gosport AS. Taylor Challenge Cup. Ad: 1, Mr A.

Atkinson, E. Knight Cup, Adey: 1 & 2, Mr J. Salt, Junior Cup and C & A Smith Cup; 3, Mr K. Atkinson, B: 1 & 2, Mr D. Mackay, Stoodley Cup; 3, Mr R. Adams, Ca: 1, Mr H. Armitage; 2, Mr M. West; 3, Mr T. Grant, C: 1 & 2, Mr M. West, J & M Mason shield; 3, Mr S. Crabtree, Db: 1 & 3, Mr J. Pollard, J. & M. Mason shield; 2, Mr D. Mackay, D: 1, Mr J. Jupe, Best Fish in Show, S. R. Harris Leroy Cup, Gold Pin; 2, Mr A. Curtis; 3, Mr R. Adams, E: 1, Mr R. Adams, Labyrinth Bowl; 2, Mr E. Salt; 3, Mr Tuckwell, F: 1, Mr J. Jupe, The Howard Cup; 2, Mr W. West; 3, Mr D. Mackay, G: 1, Mr H. Armitage, J. D. trophy; 2, Mr J. Howard, H: 1, Mr W. Crockford; 2 & 3, Mr J. Pollard, J: 1, Mr J. Armitage, The Stockdale Cup; 2, Mr H. Armitage; 3, Mr D. Mackay, K: 1, Mr R. Onslow, Furnedge trophy; 2, Mr H. Armitage; 3, Mr W. Crockford, L: 1, Mr J. Pollard; 2, Mr R. Adams; 3, Mr H. Armitage, M: Mr B. West, D. Forse Cup; 2 & 3, Mr B. West.

O: 1, Mr R. Smith; 2, Mr W. West; 3, Mr J. Stillwell, P: 1, Mr R. Smith, McDowell trophy; 2, Mr J. Wyatt; 3, Mr J. Stillwell, Q: 1, 2 & 3, Mr J. Wyatt, R: 1, Mr R. Onslow, Sycamore Cup; 2 & 3, Mr J. Stillwell, Wm Taylor & Son trophy, S: 1 & 2, Mr W. Crockford; 3, Mr J. Stillwell, T: 1, Mr D. Mackay; 2, Mr W. West; 3, Mr R. Onslow.

Uad: 1, Mr E. Binstead; 2, Mr D. Mackay; 3, Mr V. Hunt, Ubc: 1, Mr E. Binstead, King Cup; 2, Mr W. Crockford; 3, Mr R. Bockett, V: 1 & 3, Mr J. Pollard; 2, Mr J. Jupe, Wac: 1, Mr D. Stokes, TFH trophy; 2, Mr R. Streetley; 3, Mr E. Binstead, W: 1, Mr J. Jupe, FBAS Championship shield; 2, Mr E. Binstead, Hunt Cup, Henry Luff trophy; 3, Mr D. Stokes, XB-M: 1, 2 & 3, Mr F. Willis, XOT: 1, Mr W. West, D Forse Cup; 2, Mr R. Onslow; 3, Mr S. Crabtree, XU-W: 1, Mr A. Dean, Taylor trophy; 2, Mr W. West, Z: 1, Miss Ryder, Emma Banbury Cup; 2, Mr J. Jupe; 3, Mr R. Shirley.

OVER 500 tropical and cold-water fish were on display when HOUNSLOW & DAS held their annual Open Show. Some entries had travelled from various parts of England and Wales to compete in the 32 classes. The coldwater classes were well supported and some nice fish from local waters had been entered. Mr R. Esson, well known FBAS judge and authority on coldwater fish, commented on the classes and pointed out the unusual markings on some of the entries. The characin class was one of the most popular this year with many beautiful specimens. The barb class was also a feature of interest, particularly the larger species, some of which were in very fine condition. One of the more unusual entries was a mud skipper, which displayed a very fine set of teeth. The class of aquascapes was unfortunately low in entries, but those com-

petitors who had entered in this class had devoted a lot of attention to perfecting these very interesting aquatic scenes. An aquatic shop was under management of Mr R. Hart, who had put in many hours of hard work making all-glass aquaria and other items for the use of the hobbyist. The refreshment bar, also a popular area, had been organised by Mr B. Nelhams and Mrs M. Pratt, who worked continually through the day, and deserve the highest praise for their efforts. The show was run according to FBAS rules and the FBAS judges officiating were: 'A' class: Mr F. Tomkins, Mr M. Carter, Mr A. Blake, Mr R. Esson and Mr P. 'Ginger'. 'B' class: Mr R. Fox, Mr D. Lambourne and Mrs P. Baynton. On completion of judging, the impressive array of silver cups, plaques and other trophies were awarded to the following:

Ak: 1, Mrs K. Paine; 2, Mr R. S. Hart, Ba: 1, Mr & Mrs A. J. Crew; 2, Mr J. Nethersell; 3, Mr R. Canning, Bz: 1, Mr T. Burvill; 2, Mr C. Kislisbury; 3, Mr R. F. Thoday, Ga: 1, Mrs P. Newbury; 2, Mr C. Kislisbury; 3, Mr D. S. Parrott, Ca: 1, Ward & Schultz; 2, Mr R. F. Thoday; 3, Mr D. M. Reilly, Db: 1 & 3, Mr M. Carter; 2, Mrs P. Newbury, Dc: 1 & 2, Mr T. A. Butler; 3, Mr & Mrs Houghton, D: 1, Mr R. J. Canning; 2, Mrs M. Nethersell; 3, Mr R. F. Adams, Ea: 1, Mr A. Thacker; 2, Mr

C. J. Richards; 3, Mr R. Shirley, Fz: 1, Mr D. M. Reilly; 2, Mr K. Usher; 3, Mr W. West, Fzdef: 1 & 3, Mr D. Brooks; 2, Mr R. F. Thoday, Ez: 1, Mrs S. Parrish; 2, Mr A. Chaplin; 3, Mr R. F. Adem, G: 1, Mr F. Farrell; 2, Mr T. Wooley; 3, Mr D. M. Reilly, H: 1, Mr & Mrs A. J. Crew; 2, Mr M. Nethersell; 3, Mr C. Kislisbury, J: 1, Mr A. Chaplin; 2 & 3, Mr A. I. Feasi, K: 1, Mrs P. Newbury; 2, Mr M. Carter; 3, Mr H. J. Foxley Brown, L: 1, Mr A. C. Toll; 2, Mr K. A. Hillier; 3, Mr R. Crisp, M: 1, Mr R. F. Thoday; 2, Mr G. Woodhams; 3, Mr I. Lacey, NBY: 1, Mr B. Houghton; 2, Mr K. Usher; 3, Mr J. Nethersell.

O: 1, Mr A. E. Noronha; 2, Mr M. Collins; 3, Mr C. J. Richards, P: 1, Mr A. P. Constantine; 2, Mr T. Wooley; 3, Mr A. E. Noronha, Q: 1, Mr R. F. Thane; 2, Mr R. S. Hart; 3, Mr B. Melch, R: 1, Mr T. Burvill; 2, Mr A. P. Constantine; 3, Mr A. E. Noronha, S: 1, Mr A. E. Dully; 2, Mr V. Valley; 3, Mr T. Reilly, T: 1, 2 & 3, Mr K. Usher.

Ua & b: 1 & 2, Mr F. Hoppenbrowers; 3, Mr F. Pinder, Uc & d: 1, 2 & 3, Mr L. Roberts, V: 1 & 3, Mr L. Roberts; 2, Mr F. Pinder, W: 1, Mr J. Sheppard; 2, Mr F. Pinder; 3, Mr T. Reilly, XBM: 1, Mr A. E. Noronha; 2, Mr R. Pain; 3, Mr T. Wooley, XOT: 1 & 3, Mr K. Usher; 2, Mr M. Carter, Specialist class: 1, Mr K. Usher; 2, Mr T. Wooley; 3, Mr B. Meach.

Awards were presented by the Society's chairman, Mr B. Nelhams. All credit for the success of this annual major event of the HOUNSLOW & DAS must go to show manager, Mr E. Sheppard, who was responsible for the smooth running of this very efficiently organised activity.

Aireborough's Open Show

AT the AIREBOROUGH & DAS Open Show the highest-pointed Society was Doncaster and the highest-pointed exhibitor was Mr S. Walsh of Accrington.

Furnished aquaria: 1 & 2, Mr C. Freeman (Swillington), Furnished mini-jar: 1, 2 & 3, Mr & Mrs Toyne (Sheaf Valley), av Livebearer (novice): 1, Mr Robshaw (Swillington); 2, Mr Whiteman (Darfield); 3, Mr Curbishley (Darfield), av Barb (novice): 1, Mr J. Cornforth (Bradford); 2, Mr Curbishley (Darfield); 3, Mr T. Robshaw, av Characin (novice): 1 & 2, Mr R. Jenkinson (Huddersfield); 3, Mr & Mrs Beaumont, av Cichlid (novice): 1, Mr K. Gill (Huddersfield); 2, Mr Carrick; 3, Mr Wright (Middletown), av Anabantid (novice): 1, Master Lake (S. Humberside); 2, Master I. Essex (Heywood); 3, Mr Campling (Swillington), av Carpe & minnows (novice): 1, Mr P. Suggen (Bradford); 2, Mr R. Jenkinson; 3, Mr Campling, av Catfish & loach (novice): 1, Mr Robshaw; 2, Mr Whiteman; 3, Mr McBride.

Guppies: 1, D. & M. Laycock (Sheaf Valley); 2, Mrs Heap (Keighley); 3, Mr & Mrs Feasey (Doncaster), Platys: 1, Mr & Mrs Brett (Retford); 2, Mr & Mrs Holmes (Castleford); 3, Mr D. Thorpe (Doncaster), Swordtails: 1, Mr Thorne; 2, Mr Smith (Horsforth); 3, Mr & Mrs Roberts (Doncaster), Mollies: 1, Mr Reeve (Eboracum); 2, Mr N. Blenkin; 3, Mrs Appleton (South Leeds), av Livebearer: 1, Mr Reeve; 2, Mr N. Blenkin; 3, Mrs Appleton, Livebearer pairs: 1, Mr & Mrs Feasey; 2, D. & P. Birdsall; Mr J. Abbott (Swillington).

Egg-layer pairs: 1, Mr J. Emerson (Castleford); 2, Mr S. White (Retford); 3, Mr & Mrs Richardson, Self-coloured fighters: 1, Mr & Mrs Riley; 2, Mr & Mrs Rawlings (Castleford); 3, Mr & Mrs Green, Multi-coloured fighters: 1, Mr & Mrs Riley; 2, Mr Thorpe; 3, Mr & Mrs Rawlings, Small anabantids: 1, Mr & Mrs Lake; 2, Mr G. Brooks; 3, Mr & Mrs Fletcher, av Anabantids: 1, Miss Hall (Workop); 2, Mr W. Blundell (Doncaster); 3, Mr Morgan (Castleford), Small barbs: 1, Mr & Mrs Crowley; 2, Mr D. Suggen (Bradford); 3, Mr & Mrs Fletcher (Don-

caster), sov Barba: 1, Mr & Mrs Roberts; 2, Mr P. Smith; 3, Mr & Mrs Cohen (Doncaster). Small characins: 1, Mr V. Davison (Northumberland); 2, Mr & Mrs Brett (Retford); 3, Mr & Mrs Richardson. Large characins: 1, Mr & Mrs Vernon; 2, Mr & Mrs Roberts; 3, Mr P. Ridley. Dwarf cichlids: 1, Mr & Mrs Vernon; 2, Mr & Mrs Binns (Scunthorpe Museum); 3, Mr Middlemast (Stanley). Angels: 1 & 3, Mr Carrick (Scarborough); 2, Mr & Mrs Caldwell. Rift valley cichlids: 1 & 2, Mrs Frisby (Hull); 3, Mr & Mrs Fletcher, sov Cichlids: 1, Mr & Mrs Caldwell; 2, Mr P. Smith; 3, Mr & Mrs Richardson.

Corydoras catfish: 1, Mr & Mrs Cohen; 2, Mr & Mrs Emerson; 3, Mr & Mrs Vernon. Loaches: 1, Mr J. Cornforth; 2, Mr & Mrs Daines; 3, Mr & Mrs Binns, av Catfish: 1, Mr W. Blundell; 2, Mr A. Tiffany; 3, Mr & Mrs Binley. Sharks & Foxes: 1, Mr Suddan (Bradford); 2, Mr Shackleton (Hull); 3, Mr & Mrs Holmes. Toothcarp: 1, Master Young (Hull); 2, Mr J. Middlemast; 3, Mrs Morrissey. Rasboras, danios & minnows: 1, Mr & Mrs Green; 2, Mr & Mrs Fletcher; 3, Mr & Mrs Feasey, sov Eglayers: 1, Mr Turnbull (Bimbi); 2, Mr Stead; 3, Mr & Mrs Liddle (Bimbi).

Female livebearers: 1, Mr & Mrs Green; 2, Mr B. Jackson; 3, Mr D. Walker. Female eglayers: 1, Mr & Mrs Chester; 2, Master J. Emerson; 3, Mr & Mrs Daines. Livebearers, breeders: 1-10: 1, Mr J. Abbott; 2, Mr D. Turnbull; 3, Mr W. Blundell. Livebearer, breeders 11-20: 1, Mr & Mrs Richardson. Eglayers, breeders: 1-10: 1, Mr B. Jackson; 2, Mr & Mrs Fletcher; 3, Mr & Mrs Toyns. Eglayers, breeders 11-20: 1, Mr Nicholls (Swillington); 2, Mr Seaman (Swillington); 3, Mr Coope (Doncaster). Junior livebearers: 1, Master J. Emerson; 2, Master F. Ridley (Heywood); 3, Master S. White (Retford). Junior av eglayer: 1, Miss L. Ridley; 2, Master J. Emerson; 3, M. & T. Holmes.

Breeders twintail & fish (coldwater): 1 & 2, Mr J. S. Hall. Common goldfish & comets: 1, Mr Shaw (Sheaf Valley); 2, Mr S. Walsh (Accrington). Shubunkins: 1, Mr Shaw; 2, Mr J. S. Hall. Veiltails, crandas: 1, Master J. Easton (Heywood). Lionheads: 1, Mr J. S. Hall. Moors: 1, 2 & 3, Mr S. Walsh. Fantails: 1, 2 & 3, Mr S. Walsh, av Fancy goldfish: 1, Mr J. S. Hall, av Coldwater (European): 1, Mr T. Read (Workop); 2, Mr & Mrs Riley (Leeds P.O.); 3, Mr S. Walsh, av Coldwater (North American & Asian): 1 & 2, Mr S. Walsh; 3, Mr Blundell (Doncaster).

Good Entry at Lytham's Open

THERE were 555 entries at the LYTHAM AS 9th Open Show, the results of which are as follows:

Guppies: 1, Mr & Mrs Burton (Blackburn, 72); 2, Mr Poulton (Northwich, 71); 3, Mr & Mrs Greenhalgh (Bury, 70). Mollies: 1, Mr & Mrs Baldwin (Sandgrounders, 74); 2, Mr M. Baker (Warrington, 73); 3, Mr E. Ackroyd (Aireborough, 72). Swordtails: 1 and section winner: Mr & Mrs Muckle (Sandgrounders, 75); 2, Mr & Mrs Burton (74); 3, Mr D. Adams (Wythenshawe, 73). Platys: 1, Mr A. Squirrel (Wythenshawe, 73); 2, Mr W. Samber (Sandgrounders, 71); 3, Mr C. Eason (Sandgrounders, 70). av Livebearers: 1, Mr C. Norton (Sandgrounders, 74); 2 & 3, Mr & Mrs Baldwin (73 & 71).

Characins up to 2": 1, Mr E. W. Hodgson (Penrith, 70); 2, P. & H. Batchelor (Lyne, 69); 3, Mr & Mrs Muckle (68). Characins over 2": 1 and section winner: 1, Mr J. Ridley (73); 2, Mr E. Lees (Wythenshawe, 71); 3, P. & H. Batchelor (70). Barbs up to 3": 1 and section winner: Mr & Mrs Stock (Farnworth, 73); 2, R. & A. Johnson (Hyde, 72); 3, Mr C. Artus (Wythenshawe, 71). Barbs over 3": 1, P. & H. Batchelor (72); 2, Mr A. Bickerstaffe (Blackburn, 70); 3, Mr R. Haight (Blackpool, 69). Rasboras: 1, Mr & Mrs Crowley (Middleton, 70); 2, Mr E. Lees (69); 3, Mr W. Hayes (Lyne, 67). Danio: 1 and section winner: Mr P. Wrench (Northwich, 73); 2, Mr W. Samber (70); 3, Mr E. W. Hodgson (69). Minnows: 1, Mr M. Baker (Warrington, 68); 2, T. & J. Selby (Wythenshawe, 66). Angels: 1, E. & A. Axon (Ashton under Lyne, 72); 2, Mr K. Brown (Blackburn, 70); 3, D. & C. Gregson (Blackburn, 69). Dwarf cichlids: 1, section winner and Best Fish in Show: Mr & Mrs Burgoyne (76); 2, Mr A. Jenkinson (Sandgrounders, 73); 3, Miss H. Johnson (Hyde, 72). Large cichlids: 1, P. & H. Batchelor (75); 2, Mr S. Hooton (Sandgrounders, 74); 3, Mr A. J. Austin (Five Towns, 73). Fighters: 1, 2, 3 and section winner: Mr G. Davies (Heywood, 73, 71 & 70). av Anabantids: 1, Mr N. & M. Rimmer (Sandgrounders, 72); 2, Mr & Mrs Newton (Blackburn, 71); 3, Mr D. Carr (69).

av Catfish: 1, P. & H. Batchelor

(73); 2, Miss M. Burton (72); 3, Mr W. Hayes (70). av Loach: 1, 2 and section winner: Mr & Mrs Muckle (75 & 73); 3, Mr E. W. Hodgson (71). av Labeo or shark: 1, Mr & Mrs Baldwin (71); 2, Mr E. Ackroyd (Aireborough, 69); 3, J. & K. Hinchey (Lyne, 67). Corydoras: 1, P. & H. Batchelor (75); 2, D. G. & S. Harvey (Sandgrounders, 74); 3, Miss M. Burton (73). Flying foxes: 1, Mr E. Hampson (Wythenshawe, 71); 2, Mr A. Jenkinson (Sandgrounders, 70); 3, Mr Gardner (Blackburn, 68). av Toothcarp: 1 section winner: Mr & Mrs Tasker (72); 2, Mr & Mrs Marshall (70); 3, Mr I. T. Powley (Penrith, 69). av Tropical: 1, 2 and section winner: P. & H. Batchelor (75 & 74); 3, P. & M. Wheland (Blackburn, 73).

Eglayers, hard: 1 and section winner: Mr S. Hooton (Sandgrounders, 76); 2, Mr P. Squirrel (73); 3, E. & A. Axon (69). Eglayers, easy: 1, Mr J. Ridley (74); 2, Mr D. A. Wilkinson (72); 3, Mr G. Boyes (Lytham, 68). Livebearers: 1 & 2, Mr A. Manser (Sandgrounders, 69 & 67); 3, D. & C. Gregson (65). Eglayers: 1 and section winner: Mr & Mrs Muckle (75); 2, Mr A. Oldham (74); 3, Mr & Mrs Baldwin (72). Pairs livebearers: 1, Mr & Mrs Newton (71); 2, Mr & Mrs Marshall (70); 3, Mr C. Norton (69).

Common goldfish & comets: 1, Mr S. Walsh (72); 2, Mr & Mrs Wolstenholme (71); 3, Mr C. Whitey (69). Shubunkins, Bristol, London: 1 & 2, Mr C. Whitey (59 & 56). Veiltails, fantails and moors: 1, Mr & Mrs Wolstenholme (74); 2, Mr S. Walsh (72); 3, Mr S. Foote (Accrington, 69). av Coldwater: 1, 3 and section winner: Mr G. Harvey (75 & 70); 2, Mr D. Harvey (73). Juniors eglayers: 1 and section winner: Mr S. Brown (Farnworth, 74); 2, Mr T. Brown (Warrington, 73); 3, J. H. Wilkinson (Fleetwood, 72). Juniors livebearers: 1, Master F. Ridley (Heywood, 72); 2, Mr A. Squirrel (71); 3, Miss M. Burton (Blackburn, 70). Juniors coldwater: 1, Mr D. Harvey (70); 2 & 3, Mr S. Foote (68 & 65). av Marines: 1 and section winner: Mr K. Smith (Middleton, 70). Furnished mini jars: 1 and section winner: Mr K. Smith (Middleton, 73); 2, Mrs Ham (Lytham, 72); 3, Mr & Mrs Muckle (71).

Meetings and Changes of Officers

GLOUCESTER AS. Chairman, Mr L. Griffiths; vice-chairman, Mr C. Freshney; secretary, Mr K. Taylor (69 St John's Avenue, Churchdown, Gloucester). Meetings: 1st Wednesday of month, 8.00 p.m., Lower Tuffley, Old Community Centre, Tuffley Lane.
HARLOW AS. New show secretary, Mr P. Hynes (16 Holland's Croft, Hunsdon, Herts; phone Much Hadham 2419).
KINGSTON & DAS. Secretary, Mrs M. West; phone 01-549 3385. Meeting: 1st & 2nd Thursday of month.
LEWISHAM & DAS. Chairman, Mr J. Walker; secretary, Mr A. Higgins;

financial secretary, Mrs B. Goodfellow; show secretary, Mr Osborne; assistant, Mr Miles; P.R.O., Mr C. J. O. Halloran (56 Elford Close, Ferries Estate, Kidbrooke, London, SE3). Meetings: 1st & last Monday of month, St Lawrence's Church, Bromley Road, Lewisham.

LINCOLN & D. MARINE AQUARISTS CLUB. New Society. Chairman, Mr P. Hamerton; vice-chairman, outings officer, Mr B. Edwards; secretary, Mrs S. J. Edwards (1 Whitehall Terrace, West Parade, Lincoln LN-1PQ; phone Lincoln 33291 after 6.0 p.m.);

treasurer, Mrs M. Evans; P.O., Mr D. Stainer.

MID-HERTS AS. New venue. Committee Rooms, Royal British Legion, 85 Verulam Road, St. Albans. 4th Friday of month.

ROEHAMPTON AS. Secretary, Mr B. W. Manning, 83a Putney High Street, Putney, London, SW15; chairman, Mr H. J. Foxlee-Brown. Meetings: 2nd Wed. Minstead Gardens Old Peoples Hall, Minstead Gardens, Roehampton, London, SW15.

SLOUGH & DAS. Secretary, Mrs E. Knight (52 Aldin Avenue, South, Slough). Meetings: 3rd Wednesday of month. Friends Meeting House, Ratstone Road, Slough.

SOUTH SHIELDS AS. New secretary, Mrs J. Laydon (110 Morpeth Drive, Moorside, Sunderland, Co. Durham).

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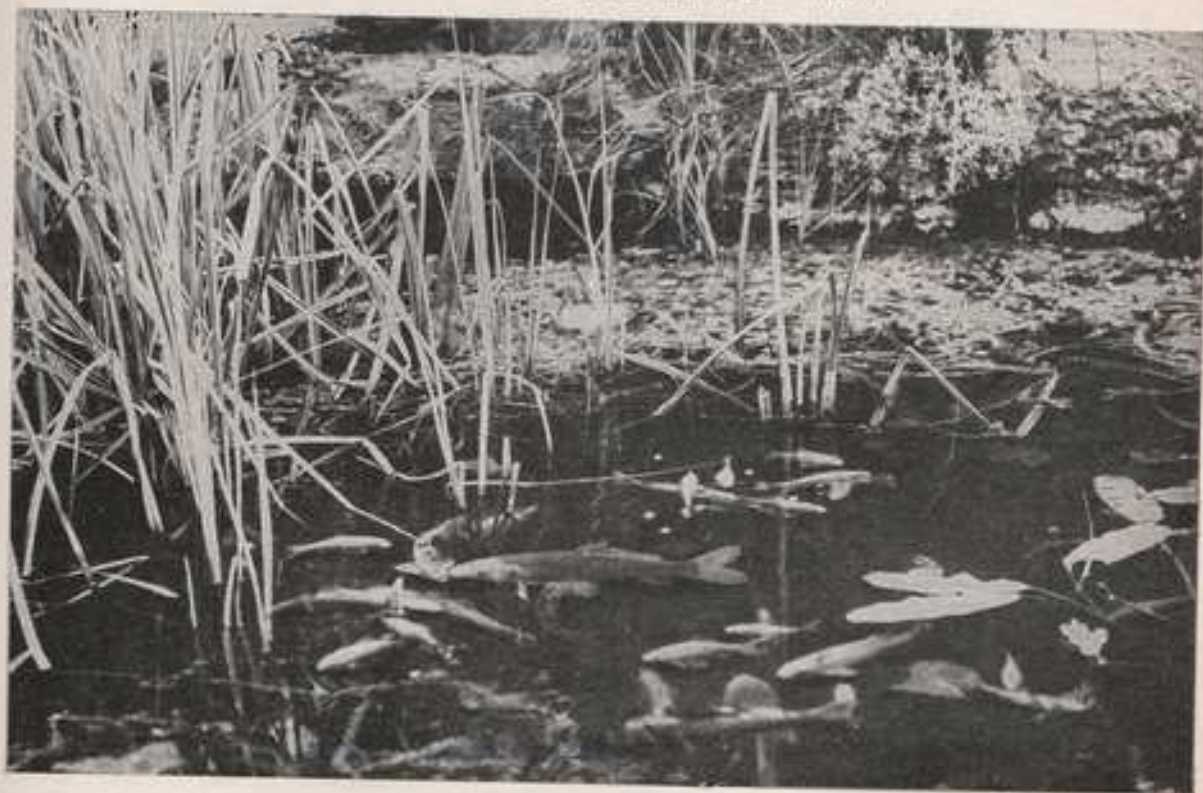
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In Brief...

... **SUFFOLK A & PA**, in between preparations for 'Colourfish 75', were able to enjoy the talk on live foods given by Mr V. Green.

... A new marine club has been formed, the **LINCOLN & DISTRICT MARINE AQUARISTS CLUB**. All marine enthusiasts are welcome. Enquiries to secretary, Mrs. S. Edwards, 1 Whitehall Terrace, Lincoln (phone after 6.0 p.m., Lincoln 33291). For further details see Meetings & Changes of Officers.

... **BISHOPS CLEEVE AS** members have enjoyed some lively meetings including one where members took part in a quiz and discussion and another on fish photography given by Mr T. Viner.

... A record number of entries ensured a most successful Open Show for **CARDIFF AS**.

... **KINGSTON & DAS** hold a Bring-and-Buy evening on Thursday, 20th November, at 8.00 p.m. at Elm Road School, Elm Road, Kingston, Surrey. All welcome.

... **BOURNEMOUTH AS** viewed the FBAS slide-tape lecture "Down Among the Z Men" with much approval, particularly the selection of plants described. In the table show Mr & Mrs Bebb won the av guppy and av danio classes, Mrs Bebb those for tropical pairs and livebearer pairs; Master S. Haskins won the av characin class, Mr Travers the

The joint secretaries of HORSFORTH DAS, Mrs B. M. and Miss J. Helm, ask us to stress that the Horsforth Open Show will definitely take place on 30th November as arranged. The Points Scheme at the Show will also count for the award, contrary to statements printed in the news letter. The last year's points were sent in.

common goldfish and Mr K. S. Gibbs the class for av labyrinths.

... A plea from **LINCOLN & DAS**. Recent hirings of slide lectures have proved well below standard. The Committee would welcome information from other clubs giving details of other distributors of slides, films and such materials. Please contact Mrs S. Woodliffe, secretary, 38 Richmond Road, Lincoln, LN1 1LQ.

... **BRIGHTON & SOUTHERN AS** have won the two-way leg of the 'Over the Downs' Competition between Brighton and Mid-Sussex. They wish to thank the sporting losers and look forward to next year's contest. An interesting lecture by Mr C. West on fish-showing completed a pleasurable evening.

... **MID-SUSSEX AS** propose to inaugurate a fund-raising effort with the aim of buying or building their own meeting place. Details of the Society's Presentation and Buffet Dance on 14th February 1976 have also been announced — all welcome, tickets £1.75 each, please contact Mrs S. Corbin, 80 Marlborough Drive, Biggin Hill, phone 41632.

... MR & Mrs Calam have won the **LINCOLN & DAS** Richard Batnes trophy.

... A change of venue for **MIDHERTS AS**. From 24th October meetings will be held in the Committee Rooms, Royal British Legion, 85 Verulam Road, St Albans, fourth Friday of month. Forthcoming attractions: lectures on general fishkeeping, egg-laying toothcarps, tropical plants, plus a table show each month. For further details ring Mr S. Birch, Park St. 72425.

... **THE CYMRU NATIONAL AQUARIST ASSOCIATION** request the return please of the Colin Turner Cup for the best platy awarded at the 2nd Welsh National Open Show held on 19th May 1973 to Mr C. Turner, 146 Arran Street, Roath, Cardiff: phone Cardiff 498982.

Dates for Your Diary

1st November. **ESSEX, NORTH & EAST LONDON AA** Lecture. Mr A. Lawman: 1974 visit to goldfish breeders of Japan, Friday Hill House, Simmonds Lane, Chingford, E4, 7.0 p.m., admission free. Details: Mr A. Chandler, 233 Forest Road, Leytonstone, London, E11 1LE (phone: 01-539 3422).

2nd November. **BLACKBURN AQUARIST WATERLIFE SOCIETY** Open Show, Windsor Hall, Blackburn. Details: Mr T. Burton, 21 Henry Street, Rishton, nr Blackburn, BB1 4JJ.

9th November. **GLOSSOP AS** Open Show, Adult Education Centre, Talbot Street, Glossop, Derbyshire. Details: Mr S. Turner, 58 Ansdal Street, Glossop: phone Glossop 4409.

9th November. **HALIFAX AS** Open Show, Forest Cottage Community Centre, Cousin Lane, Ilkington, Halifax. Schedules: Mr D. Shields, Cobblestones, Gainest, King Cross, Halifax: phone Halifax 80116.

16th November. **BRADFORD & DAS** Open Show, East Bowling Unity Club, Leicester Street, Bradford 4. Schedules: Mr D. Suddan, 18 Southmere Crescent, Great Horton, Bradford 7.

16th November. **WALTHAM & DAS (FBAS)** Open Show, Mission Grove School Annex, Warner Road, Walthamstow, London, E17. Open to public, 3.0 p.m. Details: Mr A. Chandler, 233 Forest Road, Leytonstone, E11 1LE (phone: 01-539 3422).

22nd Nov. **GOLDFISH SOCIETY OF GREAT BRITAIN** Meeting, Conway Hall, Red Lion Square, Holborn, London, WC1, 2.00 p.m.

22nd November. **FUR, FEATHER & AQUARIA SHOW**, King's Hall, 39 Lower Clapton Road, London, E5. Schedules: Mrs S. Hedges, Koi Korner, 150 Ashburton Avenue, Seven Kings, Ilford, Essex, IG3 9EL: phone 01-590 3239.

30th November. **HORSFORTH AS** Open Show, New Civic Hall, Bradford Road, Stanningley, nr. Pudsey, Yorks. Details: Mr C. Corms, 15 Thornleigh Grove, Leeds, LS9 8QR.

8th December. **FBAS** Annual General Meeting, 2.30 p.m., Conway Hall, Red Lion Square, Holborn, London, WC1.

1976

4th April. **NELSON AS** Open Show, The Civic Centre, Stanley Street, Nelson, Lancs. Details: Mr J. Stokes, 3 Beckenham Court, Burnley.

22nd May. **MERTHYR AS** Open Show. Details: Mr D. Burgess, 4 Holly Way, Gurns Estate, Merthyr Tydfil.

28th August. **THIRD WELSH NATIONAL OPEN SHOW** and Exhibition of Tropical, Marine and Coldwater fish, Sophia Garden's Pavilion, Cardiff. Details: Mr C. Turner, 146 Arran Street, Roath, Cardiff: Cardiff 498982.

12th September. **HARLOW AS** Open Show.

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FBAS Show Rules, Constitution & Technical Information Booklet No. 5, 25p each post free. **FBAS National Show Fish Sizes & Technical Information Booklet No. 6**, 55p each post free. **Booklet Sets Nos. 1-6**, £1.50 post free. — P.F. Publications, 554 Garratt Lane, London, SW17 0NY.

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