

OCTOBER 1973

20p

Pet Fish

monthly

The PRACTICAL FISHKEEPING MAGAZINE



Contents include:

Breeding the Black-Spot Barb

How and Why Colour is Shown

International Congress

Marinist's Notebook

Autumn Attention to Ponds

Aponogeton ulvaceus

What's New?

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In This Issue

	Page
Comments and Quotes	169
Letters	170
The Aquarium Show '73	179
How and Why Colour is Shown	180
Meetings and Changes of Officers	182
Autumn Attention for Coldwater Tanks and Garden Ponds	183
Breeding of the Black-Spot Barb	185
Marine Project—2 Years On	188
Personal Comment	191
What's New?	192
Marinist's Notebook	193
Europe's Federations Meet in France	194
Care and Cultivation of <i>Spongion abnormis</i>	195
Readers' Queries	
Answered	198
Book Reviews	199
Club News	200
In Brief	202
Dates for Your Diary	204

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Comments and Quotes

- International co-operation
- National interests

International Aquatics

WE are sure that we express the sentiments of all fishkeepers of good will in this country anxious to further the interests of their hobby when we offer our congratulations to the Federation of British Aquatic Societies for the support they give to the efforts of European fishkeepers to promote closer ties amongst the national aquatic federations. In particular, appreciation should be expressed for the efforts of FRAS Council Member Mr Tom Glass, who has through recent years forged many valuable links both personally and on behalf of the FRAS with fishkeepers in Europe. In this issue appears a report of the assembly of Federation representatives that took place in France this summer, and this appears to have been a most stimulating occasion for the participants.

It has always been the policy of *PetFish* to bring to our readers news and articles from the best of continental as well as of British fishkeepers and our pages have carried articles from authorities in Czechoslovakia, France, Germany, and the Netherlands amongst others; we are certain that nothing but good can come of the exchange of ideas. Will some of the first members of the public in the *quarant* to use the Channel Tunnel be aquarists, led perhaps on this side by Mr Tom Glass and fellow officers of the FRAS?

Backward Step

WITH the type of co-operation mentioned above likely to bring great rewards in Europe, it is all the more saddening to note an attempt to form yet another 'national' organisation in this country. Ostensibly having the highest motives 'of achieving uniformity with regard to show standards and methods of judging over as wide an area as possible' the scheme must

knowingly carry the seeds of partition within its very inception. Two years ago, in October 1971, we commented on the breakdown of the constructive talks on uniformity of showing and judging standards held between the Federation of British Aquatic Societies, the Federation of Northern Aquarium Societies and the Midland Association of Aquarium Societies; these talks came to a halt over disagreement on what the new rules were to be called. Unfortunately there seems to have been stagnation on this issue ever since. Perhaps the northern aquatic groups are impatient to get on with the task of promoting uniformity of standards, but it can scarcely be called progress for one vested-interest group to put on new hats, announce that they are now founder members of a 'Confederation of United Kingdom Aquarists' and invite co-operation from the rest.

If such an organisation were to spring from a concerted action by all the major aquatic organisations it could be welcomed by everyone, but this is not the case. If it could be seen to be promulgated by groups with ideas and plans embracing wider and more worthwhile issues than the committee job of 'standards' it could be welcomed, but this is not the case. The clock is being put back 25 years. It can only be hoped it won't take another 25 years to get back to where we were in 1971.

DIARY 1974

AT the end of this month the *PETFISH Aquarist's Pocketbook and Diary 1974* will be published. It has an enlarged aquatic data section, the usual 16 pages of world maps in colour and is fitted with pencil. Price (to include VAT) is 44p (51.50 post free USA and Canada). Orders for single copies and trade orders can be sent now to P.F. Publications, 554 Garratt Lane, London, SW17 0NY, for despatch immediately the Diary is published.



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

'Drugged' Fish

REGARDING your Comments and Quotes in your July issue, I feel I must reply to the drugged fish problem. While I will agree with Bob Goldstein that quinaldine will probably not cause any harmful effects to fish in laboratory tests, its use under the sea for collecting is quite another story.

In the laboratory it is possible to give controlled doses of the drug in a measured amount of water, but under the sea this is absolutely impossible. If a small fish, say a queen angelfish or jewelfish, is hiding in a deep hole and the drug is squirted in the hole, the fish may lock itself in there until it is knocked out. Then the poor unconscious body may float out to be netted by the brave collector. Of course the fish may have absorbed a lethal dose by that time.

Quinaldine in itself is not harmless. Right on the label it states: 'Caution: Vapor Harmful. Avoid prolonged or repeated breathing of vapor. Avoid prolonged or repeated contact with skin.' Now if it was totally harmless, this label would not be necessary. But that is only half of the story. The other half is that most collectors mix the drug with acetone. Acetone is extremely poisonous.

A skilled collector can catch all the fish he can use without drugs, poison or dynamite. I have done it myself for nearly 20 years and taught many others. My new book, *THE MARINE COLLECTOR'S GUIDE*, tells exactly how to do it. It is a little more work without drugs but the losses are negligible. When I was collecting full time, my annual collecting losses were less than $\frac{1}{4}$ of 1%. But I have seen drug collectors toss out half their catch or a good portion of it. I have seen their tanks with dead fish on the bottom, without a mark on them but obviously dead from drugs. Florida now has a law prohibiting the use of drugs for fish collecting, except by special permit, so a dealer can write to the Dept. of Natural Resources in Tallahassee, Florida and ask for a list of collectors who use the drugs, compared to those who do not, and buy from those who do not use drugs. Myself, I wouldn't want a fish free if I knew it was caught with drugs.

ROBERT P. L. STRAUGHAN

Salt Water Aquarium Magazine

Too Little

AFTER purchasing yet one more bag of daphnia which contained about ten fleas at the most, I should like to ask you to print this letter as a protest. The number of daphnia in the bags I've been getting recently is just ridiculous. All that pink water and about a dozen fleas! I appreciate all about the difficulty of collecting them, the cost of packaging them and so on—but for goodness sake, baggers-up of daphnia, play fair. Even the long-suffering fishkeeper will turn sour in the end. The daphnia have always been a bit of a 'treat' but they're now in the caviare range.

Feltham, Middlesex

I. BAKEWELL

—And Too Much

I'VE been meaning to write to you for the last couple of months to thank you for the timely tip about not killing *Daphnia* by too great an air stream (Comments and Quotes, 1973, April 1973). I can occasionally obtain a couple of pailfuls of daphnia from a sewage farm and when the yield is good it's almost impossible to resist the urge to take that little bit extra, even though you know it's greatly overcrowding the fleas. I've been accustomed to rush home with the buckets and bung in two air lines belting out air in the belief that I was saving the daphnia and not realising that I might be actually killing them. With this warm summer I would have tried to get even more air stirring up the water in the bucket. Anyhow, I've cut it down now to a gentle burble and although it's pretty difficult to judge the saving, I definitely think that the 'mortality' rate has improved and the daphnia has lasted longer.

Cranleigh, Surrey

H. L. SIMONS

Confederation of United Kingdom Aquarists

THIS Confederation has been set up by the following organisations with the object of achieving uniformity with regard to show standards and methods of judging over as wide an area as possible: Federation Northern Aquarium Societies,

Continued on page 279



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LETTERS

continued from page 279

Federation: Scottish Aquarist Societies, Yorkshire Association Aquarist Societies. The Confederation to date has brought together close on 200 societies, and is in negotiation with other bodies, who wish to maintain their own identity yet achieve the above objective. The underlying principle of the Confederation is that each member organisation continues to run its own affairs without interference from any other body, but co-operating in a united Judges & Standards Committee with equal representation from all parties concerned. Currently available—new Points System for Difficulty of Breeding. Going to print—Comprehensive List of all families, individual species, recommended minimum and maximum sizes; also revised Pointings of Single Fish, Furnished Aquaria and Plants. All these revised pointing systems have been designed to be incorporated in a loose-leaf binder and will be kept under constant review.

Already large strides have been made in achieving the overall aims and objectives of the Confederation, and uniform Show Standards and Judging Methods are now being applied to the

largest cross section of aquarium societies in this country to date and will also be applied to the largest aquarium show in this country, if not the largest in Europe, namely, the British Aquarist Festival.

We would openly welcome any other Association or Federation wishing to assist in achieving uniformity. Why not join us?

C. WALKER
Chairman, FNAS

Water Plants Wanted

I HAVE been reading with interest the articles by Mr W. A. Tomney on water plants, extremely well done. The pictures in August 1973 were breathtaking—absolutely beautiful. And the article most informative. For years I have been trying to plant my tanks but to no avail since here in the States one cannot get the variety as discussed in your articles. I am really at my wits' end seeking and never finding different plants. Here they carry only the more common water sprite, one type *Crypt. (haerteliana)*, *Cubomba*, banana plant and occasionally Amazon sword plants. Not that these plants are not good, but after years of these, one is ready for something more than this. I am now going to send for some from your advertisers in England. I would pay postage, anything as I am desperate.

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The AQUARIUM SHOW '73

Friday 2nd November to Sunday 4th November
Royal Horticultural Society's Old Hall, London S.W.1.

SCHEDULES for the competitive classes at The Aquarium Show '73 have been distributed to societies and further copies can be obtained from: 1976, 554 Garratt Lane, London, SW17 6NY. There are 18 classes for tropical fishes, and four coldwater classes comprising single-tailed goldfish, twintailed goldfish with dorsal fins, twintailed goldfish without dorsal fins, and native and foreign. There are also classes for

tropical and coldwater marines (classes Ya and Yb). Completed entry forms must be returned to show secretary Mr Ron Kerridge (75 Glebe Road, Harlow, Essex) by 22nd October. Benching takes place from 5.00 p.m. on Thursday, 1st November.

JUDGES of the competitive classes this year are to be Mr M. Carter (FBAS), Mr A. M. Deakin (FBAS/ BMAA), Mr D. C. M. Durrant (FBAS), Mr L. C. Emery (Bristol AS/GSGB), Mr P. Ginger (FBAS), Mr A. F. Hobson (FBAS/CNAA), Mr H. Towell (FBAS) and Mr R. Wigg (FBAS/CNAA).

FURNISHED AQUARIA and aquascapes form part of the Society Tableaux Competitors' stands—at least one tank on each stand having

to conform with normal FBAS entry requirements for classes Aa-Ac, Ad-Af, Ak or Al. Winners for the last 2 years, Basingstoke AS, are hoping to make it the hat-trick this year though knowing that there will be very stiff competition. Societies intending to enter who have not yet completed an entry form, please send for them to FNAS offices.

TICKETS at special rates are available for parties (minimum 10 tickets) if booked and paid for in advance. These rates (including VAT) are: adults, 22p each; children 6p each. Remittances should be sent to the Show Organiser, 554 Garratt Lane, London, SW17 6NY together with name of society (if applicable), number of tickets and day (Friday, Saturday or Sunday) required.

COLORATION IN FISHES

How and Why Colour is Shown

By IAN C. SELICK

THE number of ways in which fishes use their colours and colour patterns is vast, so only a few examples of the commoner uses will be presented here, namely courtship, recognition, territory demarcation, camouflage, defence and mimicry.

Courtship

This is the most important function of coloration and, to this end, all the other uses are often employed, i.e. recognition, territory, demarcation etc., particularly in the percoid fishes such as cichlids.

Basically it is a system of colour changes or pattern changes which are used as signals from male to female and vice versa to indicate readiness to spawn. For instance, in the unicorn fish (*Naso thyraoides*), normally a drab colour, a bright blue saddle patch together with blue vertical stripes appears in the adult male when interested in a female. Among freshwater fishes, the cichlids have been the most extensively studied, colour patterns being associated with various postural alterations to indicate willingness to spawn. In other fishes there tends to be a general increase in the intensity of colour together with an unfurling of the fins in males where these are longer than those of the female, e.g. the *Hypessobrycon rosaceus* type tetras.

Associated with courtship in many species is a complete sexual dimorphism as mentioned earlier, with regard to *Pseudotropheus auratus*. This condition is particularly prevalent amongst the Rift Valley cichlids of Africa, although other fishes do show it, together with differences in fin size and shape, e.g. *Betta splendens*.

Recognition

This is, of course, a necessary prelude to courtship and is demonstrated admirably by most fishes where a certain pattern is flashed on the sides, as mentioned above (*Naso thyraoides* etc.).

However, recognition is also important in many other contexts, particularly in schooling fish, where certain species have patterns enabling them to be

distinguished from similar fish. A good example of this is provided by the three silvery schooling *Haplochromis* of Lake Malawi (*H. boadzulu*, *H. pleurostigmoides*, *H. trimaculatus*), where all are essentially identical except for schooling marks—a horizontal black line in *Haplochromis boadzulu*, two spots in *H. pleurostigmoides* and three spots in *H. trimaculatus*.

Just after hatching and during raising it is important that cichlids be able to recognise their young, and the young recognise their parents. To this end, many adult cichlids have a 'brood care' pattern, which is often mimicked by the youngsters.

Territory Demarcation

Colour signals provide a dynamic means of demarcating territory. This may be seen to best effect amongst the brightly coloured marine fishes. For instance, many butterflies may have very similar markings, e.g. *Chaetodon auriga*, *C. ragabundus* and *C. falcula*, and yet do not attack each other as they basically feed on different foods, yet each will attack another member of the same species. Damselfishes are also extremely aggressive in their protection of territory, although colour here is often not so important, many different patterned fish occupying the same 'ecological niche'. It is probably by virtue of this territoriality amongst coral reef fishes that they have developed the bright colours and incredible patterns that make them so attractive.

Camouflage

This is an obvious use for colour and colour patterns, as shown by the well-known example of the plaice (*Pleuronectes platessa*) and other bottom flat fishes, which have the ability to change colour according to the substratum on which they lie. However, colour, often in association with shape, plays a part in the camouflage of such fishes as the discus (*Symphysodon*), the angel fish (*Pterophyllum*) and the festive cichlid (*Cichlasoma festivum*), all found in the Amazon basin amongst tree roots and

Sexual distinction by colour and pattern is prevalent in the African cichlids of the Rift valley. On this page are shown the male (right) and female (below) of *Pseudotropheus auratus*.



From a colour transparency by Roy Skipper

other similar dark habitats, hence the brown colours and/or vertical bands.

Also camouflaged, although less obviously so, are free swimming or schooling silvery fish such as the *Mplachromis* mentioned earlier. Here, only the back tends to be coloured dark as protection against aerial predators; the reflectivity provides protection from all other angles.

An interesting proof of camouflage protection amongst the bottom-dwelling catfish is provided by the unusual upside down catfish (*Synodontis nigricentris*), where the colours of other *Synodontis*

are reversed; i.e. brown underside and lighter dorsal surface.

Defence

The main form of defence is by camouflage, but some fish use sudden startling displays of colour to frighten potential enemies, or have such patterns as ocelli in the tail to confuse predators. An example of the first is the firemouth (*Cichlasoma meeki*), where the fish puffs out the lower edges of its gills and its throat in defence, the former having two large eye spots on them; the throat is bright red,



The overall dark coloration relieved by light stripes shown in the male *Pseudotropheus auratus* (top of the page) contrasts with the overall light hue overlaid with dark stripes shown by the female (left).

From a colour transparency by Ian Sellick

the whole giving the impression of a large face.

The eye spot technique is a common form of defence amongst the butterflies, such as *Chaetodon auriga* and *C. lunula*, where the ocellus occurs on the spiny dorsal fin and the real eye is obscured by a vertical black line.

Of course, colours also provide warning signals that the fish is dangerous; for instance amongst the trigger fishes: *Odonas niger*, the blue trigger, is relatively peaceful and therefore inconspicuously marked. In contrast, the picasso trigger (*Rhinocentrus aculeatus*) is brilliantly marked and quarrelsome.

Mimicry

This is an interesting side line to coloration, although it is not particularly common amongst fishes. The best-known example is the false cleaner fish, *Aplocheilichthys taeniatus*, which mimics the cleaner wrasse *Labroides dimidiatus* in both colour and habits, and profits by tearing a lump out of the larger fish which thought it was about to be cleaned!

Another form of mimicry is exhibited amongst the Lake Victoria *Haplochromis* species (and a few others), where the male anal fin carries 'egg spots', which are mimics of the real eggs to encourage the female to try and pick them up and thus inhale a mouthful of sperm-laden water to ensure complete fertilisation.

Evolutionary Aspects

How did fishes evolve the colours we now see them with? Originally fishes probably took their colour from their calcareous scales or from the plant food that they ate, and would then have been grey or possibly brownish. However, as they evolved, the ability to use pigments evolved, and the colour cells developed from the nervous tissue

leading to controllable colour. It was a question of survival of the fittest. Those fishes best camouflaged stood the greatest chance of survival, so the pressure in slow-moving fishes was for drab colours, or plain silvery sides in fast-swimming fishes. Amongst the predators, more vivid colours could develop, owing to a lesser need for camouflage.

It is difficult to say how each colour and pattern arose, but basically it would have been by mutation, the number of genes controlling colour generally being quite small; hence the ease in obtaining brightly coloured fish amongst the live-bearers such as guppies. Thus, with only a small number of genes, the effects of mutation would be correspondingly large, and then natural selection would take care of any unsuitable mutations.

I hope in these articles to have given a comprehensive coverage of all aspects of fish coloration, but obviously some things must have been left out. However, I think that I have done what I aimed to do, introduce the aquarist to the 'whys and wherefores' of his fishes, and to increase his interest in one of their important physiological aspects.

For those interested in further reading about this fascinating subject, here are some books and an article that will provide some of the answers, where they are known, to the gaps that I have left.

SIGNALS IN THE ANIMAL WORLD. Burkhardt, Schleidt and Altner. George Allen & Unwin Ltd. 1967.

THE CICHLID FISHES OF THE GREAT LAKES OF AFRICA. Fryer and Iles. Oliver and Boyd, 1972.

Wickler (1962). 'Egg dummies' as natural releasers in mouth brooding cichlids. *Nature (London)*, **194**, 1092-1093.

These all contain bibliographies for further study of any one specialised subject.

Meetings and Changes of Officers

BURY ST EDMUNDS & DAK. Chairman, Mr D. Keen; vice-chairman, Mr Clark; secretary, Mrs P. Weaver (1 Huntingfield Road, Bury St Edmunds, Suffolk IP21 2JE); treasurer, Mr J. Woodhouse; show secretary, Mr V. Green; P.R., Mr E. Keen. Meetings: 1st & 4th Wednesday of month, 8.00 p.m., Oldfellow's Hall, Whiting Street, Bury St Edmunds.

CATFISH ASSOCIATION (C.A.), New Association. Secretary, Mr N. Bedford (14 Burlington Road, New Malden, Surrey; phone 01-849 1707). Show secretary, Mr D. Lamborne (17 Wharfedale Court, Plough Road, London, SW11 2AX; phone 01-247 4710).

FANCY GUPPY ASSOCIATION, EDMONTON SECTION. Secretary, Mr D.

Phillimore (112 Wilbury Way, Edmonton, London, N9 1BN; phone 01-851 2012). Meetings: 1st Sunday of month, The Royal British Legion Hall, Hattwater Hill, Enfield, Middlesex.

HEMEL HEMPSTEAD A.S. Chairman, Mr A. Tully; vice-chairman, Mr A. DeNay; secretary, Mrs A. Graham; assistant, Mr R. Holdier; show secretary, Mr E. Bay; assistant, Mr J. Collins; treasurer, Mr G. Whorby; social secretary, Mrs M. Winder; caring secretary, Mrs A. Tully; historian, Mr S. Collins; P.R.O., Mr V. J. Mills (43 Tudor Drive, North Watford, Herts.); Junior representative, D. Whitty.

HIGH WYCOMBE A.S. Vice-chairman, Mr A. Hall; show secretary, Mr R. Leslie; publicity, Mr T. Green (12 Greenwood Meadow, Chinnor, Oxford). Meetings:

alternate Thursdays, White Horse, Oxford Road, High Wycombe.

LLANTWIT MAJOR A.S. Chairman, Mr R. S. Wigg; secretary and treasurer, Mr S. Nelson (43 Vere Street, Cadostro, Barry, Glam.); show secretary, Mr J. J. Edwards (Glarales, Mill Park, Llanberfan, Cwmwdale, Glam. CF2 2BG). New venue: Llanfildan Fawcett Comprehensive School, Hen Lane East, Llanwrda Major. Meetings: 2nd Tuesday of month, 7.30 p.m. New members welcome.

MIXENDEN TFS. New secretary, Mrs J. Poole (18 Chester Terrace, Halifax, Yorks. HX3 6LT).

RIVERSIDE A.S. Secretary, Mr D. W. Atmore (14 Kilmeccon Gardens, Asker Road, London, W12; phone 01-742 0011). Meetings: 1st & 3rd Monday of month, 20 Strosses Church Hall, Cobbold Road, off Asker Road, Shephards Bush, London, W12.

SHERWOOD A.S. New secretary, Mr Brian Bailey (11 Cedar Lane, New Orleans, nr. Newark, Notts.).

COLDWATER SCENE



By FRANK W. ORME

Autumn Attentions for Coldwater Tanks and Garden Ponds

PREPARATIONS for the wintering of your coldwater fish should now be given attention, for the cold months are not very far away. Providing the right conditions now is the best way to ensure that the fish have the optimum chance of surviving until next spring.

October is the ideal month in which to carry out the necessary work involved for it is still warm enough to make the task not too unpleasant and still allows time for the fish to settle down again after the disturbance.

Coldwater Aquaria

The indoor aquarium does not present too great a problem. Clean the glass walls of the aquarium thoroughly, so that all traces of algae are removed, and then remove any unhealthy-looking plants or leaves. If necessary the plant growth can also be thinned out slightly. After allowing the debris to settle a siphon should be passed over the compost and between the plants, to suck out as much of the refuse as possible. If this operation is being carried out inside the home I suggest that plenty of old newspaper, spread over a plastic sheet, should be laid on the floor first. This will safeguard the floor covering from any spilt water, which is usually an unavoidable part of this job. Refill the tank with clean water and allow to settle for a half hour or so; then again go over the bottom of the tank with the siphon to remove the settled sediment. Give a final filling of water and the job is finished. When refilling try to have the fresh water reasonably close in temperature to that taken out; a few degrees either way will cause no harm, but too great a difference could possibly cause the fish trouble. Provided that the fish are not overfed the aquarium should now stay clear, apart from a little algae growth, which is quite easily removed, until the spring.

Garden pools require, basically, the same treatment as the aquarium but this is obviously a much bigger task. Many people leave the annual clean out of their pools until the spring, but I think that if this work is carried out during the autumn the fish will have good healthy conditions in which to spend the winter and, as the plants are dying back, no set-back is given to the plant life at a time when it is just beginning a new season's growth.

Choose a weekend during a mild settled spell and have ready a net and various containers to place the fish in, when they are caught. These containers should be filled with water at a temperature similar to that in the pool. My own method is to fill buckets with fresh water the night before and leave them near to the pool. By the next morning the two water temperatures are reasonably near to each other and when in clear water the captured fish are easily inspected.

Cleaning the Pond

After the necessary preparations are made the work can begin. The first operation is to lower the level of the water in the pool sufficiently to enable the fish to be easily seen and netted.

If your pool does not have a drainage point then the water must be either baled out by hand or, if high enough, siphoned out. Possibly the best method is to attach a hose pipe to a submersible pump; lower the pump into the deepest part of the pool and place the other end of the hose pipe so that the water discharges into the nearest waste drain; switch on and let the pump lower the water for you. Whilst this is happening you can prepare tanks ready for any of those fish which you intend keeping indoors over the winter. It is advisable to take fish under 2 inches in length indoors for their first winter and return them to the pool next spring.

When the water has fallen sufficiently low, net the fish and place them into the previously prepared containers. Having caught the fish it is a wise precaution to remove them some distance from the area where you are working; this will avoid any mishaps. It is surprisingly easy to kick over a bucket of fish when your attention is concentrated on something else.

Complete the emptying of the pool, after which, if your water lilies or other plants are in containers, the plants can be hosed down to remove as much slime and algae as possible. Prune away all dead stems and leaves so that a clean healthy-looking plant remains. When you are satisfied with this part of the job remove the plants to a shady spot and cover with wet newspapers or sacking, which will prevent them drying out.

The dirty work now commences, with the removal of the thick layer of black mud that has

accumulated on the bottom of the pool during the season. Carefully sieve through this silt to make certain that no fish are hiding there—you will usually find one or two. The mud can then be disposed of in the flower garden or around the roses, where its richness will do good. Potential pollution in the pool is food in the garden (the strong smell will quickly disappear in the fresh air).

Having got rid of the silt give the pool a scrub and hose down, using a strong jet of water, to remove any algae or other muck from the walls of the pool. Again remove the dirty water and repeat the operation until both the pool and the water that gathers at the bottom are clean.

The plants can now be replaced and the pool slowly refilled, taking care not to disturb the planting medium. This will probably take some time so that attention can be given to the fish whilst the pool is filling up.

Inspection of the Fish

Each fish should be closely inspected for any signs of damage, pest or disease. If the pool has been correctly managed this inspection should reveal the fish to be in a clean and healthy state. However, mishaps can, and do, occur, therefore perhaps a summary of the most likely troubles and suggested remedies will not be amiss.

Torn fin. Probably the result of earlier spawning activities. Provided that there are no signs of fin rot there is nothing to worry about and the torn fin will regrow. If you wish the fish can be given a salt bath as follows: dissolve two teaspoonfuls of salt in 1 gallon of water and place the fish in for 12 hours, after which the fish can be returned to fresh water. Alternatively the affected parts can be painted with iodine diluted with three parts of water. This is best applied with a small camel hair paint brush but be very careful not to allow this medicament to reach the eyes or gills of the fish.

Missing scales. The same remarks and treatment apply as for torn fins.

Fish louse (*Argulus*). Rub off any of these parasites with the fingers and give the fish a salt bath. The pool will most likely be infested so that it will be unwise to return the fish to the pool until next spring, by which time the pest will have died from a lack of hosts.

Anchor worm (*Lernaea*). Carefully touch the thread-like parasite with a small paint brush that has been dipped into a strong, deep purple, solution of potassium permanganate; the anchor worm can then be pulled off the fish with a pair of tweezers. Touch the wound with Friars balsam and house the fish in other quarters until next spring.

Fungus. If only a small area of a fish is affected the spot can be painted with the diluted iodine solution. Where the fish is heavily infected either repeated salt baths can be given until it is cured or,

alternatively, a solution of 1 cubic centimetre (c.c.) of phenoxethol to 99 c.c. of water can be made up. Add 90 drops of this solution to each gallon of water and mix well in. The fish should be kept in the treated water until all signs of the infection have disappeared, after which it can be returned to the pool.

Fin rot. The phenoxethol treatment has also been found to be effective in curing this complaint.

Fishes. Fish never seem to be entirely free of this pest and therefore it is a good policy to give all fish a disinfectant bath to keep the fish as free as possible. To 1 gallon of water add ten drops of Dettol and stir thoroughly. Do not leave the fish in this bath for more than 9 minutes; should any of the fish become very distressed they must be immediately removed and placed in fresh water to recover. Ideally this treatment should be repeated 10 days later.

Having inspected the fish and found nothing wrong with them, or having completed the treatment of any fish found to require it, they can be replaced into the pool. Do not just tip them in as this will cause a shock to them and could lead to other trouble; the best method is to place their container into the pool and allow it to float there until the water temperatures have equalised. Then turn the container gently on to its side and allow the fish to swim out.

Should you intend breeding from any of the fish, under controlled conditions, next year they should not be put back into the pool now but, instead, housed in an indoor aquarium where they can receive that extra attention which they would not otherwise get.

The autumn clean out of aquaria and pools is well worth all the trouble and hard work, for it ensures that the fish are in a clean healthy state and are in an environment that is not likely to cause trouble through pollution. The risk of 'winter sickness' is lessened for pool fish and they should emerge next spring from their winter hibernation without mishap.

Autumn Feeding

No doubt you will have noticed that fish have developed a perpetual appetite recently. Instinct tells them that they must increase their intake of food to build up the essential body fats that are so necessary if they are to survive the winter freeze-ups. The wise aquarist will see to it that his fish, both in the indoor aquarium and garden pool, are allowed to satisfy this instinct by providing for them an ample and varied diet of nourishing foods.

Continued on page 290

Breeding of the Black-Spot Barb



Barbus filamentosus

By RUDOLPH ZUKAL

Photographs by the author

LAST summer, our permanent Exhibition in Brno was enriched by the addition of eight of these 'black spot barbs'—slim and somewhat larger types of the barb group. Although these fish have been imported into Europe from their home in western India since 1950, these were the first ones that we had received, and when we first saw them they were 2 in. (5 cm.) long and decorated with diagonal stripes. From a distance they resembled tiger barbs in colouring and *Barbus arulius* in build.

They grew fairly quickly in a 22 gallon (100 litres) tank and, to our surprise, gradually lost their diagonal stripes. They retained their silver to greenish-silver colour (with the darker colouring on their backs) and the fluorescent rainbow effect but developed a large dark patch on the side of the body above the anal fin. Sex differences were obvious: the male's dorsal fin has long fin rays, which are partly violet in colour. The female fish is clearly stronger and without the lengthened fin rays. The fish can reach a length of nearly 6 inches (15 cm.) though the ones in the photographs were about 4½ in. (11 cm.) long. They had no barbels. According to Günther Sterba, this lack of barbels serves to distinguish them easily from *Barbus mabeolai*, which they closely resemble.

So that I could watch a spawning, I chose a pair and put them in an 18-gallon tank into tap water that had been standing for some time

Translated by F. MARSH



In this picture and in the one on the preceding page the male black-spot barb is the upper fish

and was then at a temperature of 75°F (24°C). The fish were very shy and remained hidden at the bottom of the tank curled into a corner. After I'd placed some large stones in the back of the tank to serve as hiding places for them they obviously felt more secure, but as soon as they saw me approaching the tank they would disappear behind the stones. However, through patient feeding I did win the confidence of these very timid creatures (they

are also very fast and skilful swimmers and can jump only too well). The proffered tubifex worms were quickly caught, spat out again and then eaten singly. This did surprise me, for although they were undoubtedly large fish I never saw them eat a great amount of food at any one time. For a change of diet they received Tetramin and vegetable food.

After about 3 weeks of this treatment I finally lost my sorely tried patience and separated them.



Spawning occurs in the very brief instant in which the pair press their flanks together and the male's caudal overlaps the female's back

Both right and left approaches are made by the male, as seen by comparison of this picture and the lower one on the facing page



The very next day I saw several small fish swimming about at the back of the tank without being touched by the female black-spot barb. Altogether I counted nine. Then I understood. The fish had spawned during my absence, although I had been certain that no spawning would take place because I had thought, incorrectly, that the female was not 'full' enough. After a further 10 days I put the pair back together again, although the female was only

slightly 'full'. And after a further 2 days I was able to photograph what turned out to be a stormy spawning sequence.

The mating resembled that of all the barbs but for *B. semifasciatus* and *B. schuberti*. After some violent, but harmless, pushing and shoving the female swam to the Java moss, followed by the male, the fish pressed against each other often, as quick as lightning; the male swung his caudal fin



A group of the barred young of the black-spot barb at 2 months of age

over her body, the pair parted and the eggs fell down beneath them. After 4 hours I removed the spawning pair and although many of the eggs developed fungus I was able to rear more than 400 young fish without any particular difficulty.

The young fish were provided with a plentiful supply of minute live food and dried food as well. I am usually a conservative aquarist and maintain that no food can replace that provided by Nature. But I admit that this is a matter of opinion.

But I can, in good conscience, recommend these beautiful, peaceful, barbs to any aquarist who possesses a large enough tank. Of course, nothing that is worthwhile doing is ever perfectly simple and nothing absolutely faultless, so I must admit that these barbs do sometimes tear delicate plants through the speed with which they swim, but planting with strong, well-rooted plants will avoid this problem.

Marine Project—2 Years On

By ROY PINKS

RATHER over 2 years ago I decided to undertake a modest tropical marine project designed to evaluate its likely appeal to the middle-of-the-road fishkeeper. There never was any doubt that home saltwater aquaria were other than a reasonable challenge for the enthusiast, but I, like many other beginners, was apprehensive about the extent of the ultimate cost in both money and time. Of the two, in this opulent society in which we live, money may be taken as being less difficult to come by than time, and I certainly had a vested interest in this latter factor: I have a full-time job quite unconnected with the hobby, two growing children and over half an acre of cultivated garden. The latter contains ponds and (now) a collection of small foreign birds in an aviary, together with the present family pet rabbit and tortoises. Time is thus at a premium and so, I would hasten to say, is money, though I tend not to regard it as lovingly as some—this is, after all, a matter of taste as well as opportunity!

It will be clear from this brief personal aside that whatever emerged from my excursion into tropical marines, it would not survive unless it was trouble-free enough to slot into my routine. Furthermore, both the content of the effort as well as its actual extent would have to be within the capability of friends or neighbours should we be away from home for any length of time. I had also to make allowance for the fact that I have been keeping freshwater fishes for many years now, and this experience would, whatever many may say to the contrary, be of considerable help in overcoming difficulties of management in the new medium.

It is this latter point which should be dealt with first, and it is not easy, when one is so personally involved, to evaluate the real worth of experience. For my part I would say it is most valuable, but there is ample evidence that the merest newcomers

to the hobby in general have, given adherence to broad lines of advice, succeeded with marines against all expectations. At least, some have; others have been less fortunate, which is hardly surprising, as specimens of people vary just as much as specimens of fish. I think it essential to read and re-read every single book or article on tropical marine fish-keeping you can lay hands on, and this includes the BMAA Newsletter, which contains numerous unique and unpublished guidelines based on the personal experience of contributors.

In this review I intend to look at the main headings covered by the series of articles published in 1971 between February 1972 and January 1973.

Setting-up Technique

The operations carried out to set up my first two tanks would still suffice, but two modifications could be offered.

For reasons of economy I used white gravel on the tank floor in preference to coral sand, which is several times more costly. I have no reason whatever to doubt the effectiveness of this medium in the subgravel filtration system, but many aquarists will prefer the latter on account of its chemical properties. These, long term, help to maintain an alkaline reaction of the tank water, which is essential to the success of this particular technique. If large quantities of coral are used in the decor the result is similar, though it is difficult to assess at what point, in the life of any given set-up, failure may be expected because of a shortfall in this 'buffering' effect. Much would depend on the extent to which the tank water was changed, together with all the other factors of locality one could enumerate. In 2 years I have topped up my tanks only with water straight from the tap: by my reading, nothing else has been necessary.

The other recommendation at this stage relates to the seasoning of the water itself, for which 'starter' fish are usually employed, whose excretions provide the bacteria in the sand or gravel with sustenance. This 'running in' period lasts up to 6 or more weeks, and it is probable that more marine fishes are needlessly killed off by ignorance of the true state of affairs by their owners than by almost any other cause. It is indeed difficult to understand how some specimens of the same species will collapse during this time, whilst the remainder go from strength to strength. All the uncertainties and dangers of this stage could be greatly minimised if the maturing period could be reduced significantly, and it seems that this is indeed possible. Though it may not work every time, if one 'seeds' the new gravel in a tank with a quantity from a fully mature tank, it will often happen that a nitrite-free reading can be obtained after about a week, sometimes sooner. Much depends on the size of the new tank and the amount of old gravel transferred.

Choice of Tank and the Fish

My original tank was of 'stainless' steel (my quotes), and the second one was nylon-coated angle iron. I have since acquired one commercial all-glass tank and I made a further small one on the advice given in a PFM article. The stainless-steel tank proved to be a perfect nuisance on account of rust bursting out all over the top frame, and of course this gave rise to anxiety as to what might be going on elsewhere. Ultimately I replaced this with a Jewel 'Gem', which, with certain reservations, has been a success. From what I have seen and experienced I don't think there is much between any of the non-steel tanks, and the buyer need only decide which of the now wide range is best suited to his pocket and his locale. No 'stainless steel' tanks, then!

We are all like children with a new toy in the early days of our marine fishkeeping, and I suppose this is one of its more enjoyable aspects. Not so bearable, though, are the disappointments which so often come with the introduction of new fish. My experience has been that almost every addition to a tank is a potential source of danger or unrest, though the introduction of disease, other than *Quasidinium*, has been far less than I expected it would be.

On the whole it is probably better to plan the contents of your tank, allowing a really generous margin for the growth of the fish, and to purchase the lot at one fell swoop. I realise the practical difficulties of this, but the varying compatibility of species and of individuals within species makes the alternative a much less pleasurable occupation than it should be. A close watch should also be kept on the carrying capacity of the tank, for if there is any

suggestion of overcrowding, even the mildest of fish will turn on weaker members of their own species and harry them to death. This is a thoroughly unpleasant and unnecessary hardship for creatures whose chances of survival are often slender enough without the added burden of calculated mismanagement.

If, inevitably, one has to accept that the whole collection cannot be acquired at the same time, by all means use the formula that the smaller fish should be added first, and then only add a fish if it is bigger than the existing biggest occupant of the tank. As things turned out in my case, I suffered more compatibility problems than disease problems arising from introduction of newcomers, and this is probably at variance with more general experience.

I have read of case after case where whole collections were wiped out or decimated after the addition of a non-quarantined fish, but I have so far avoided this sad state of affairs. I can offer no explanation other than good fortune. I have no quarantine tank as such, but I route all fish intended for my largest tank via one of the others, which contains specimens of the so-called hardier species. I always add copper sulphate to this tank for a short period before pronouncing the new fish 'clean'. Then, as often as not I forget all about the need to transfer them! As a consequence they avoid the further upset of a water change and seem to thrive. The occupants of the large tank do rather well out of this because they gradually acquire more space if any of their contemporaries die off.

At a later stage I will examine individual species which I did add to the collection during the review period, with a commentary on their apparent 'community' suitability.

Food and Feeding

I was most apprehensive at the outset of the project about the practicability of maintaining adequate and suitable food supplies for my fish, and in particular I worried about the likely difficulties of entrusting their welfare to strangers whilst the family was absent from home for any reason. Added to this, we are exhorted to feed the fish twice a day. As these constraints are common to most fishkeepers I aimed to provide a simple diet, not in itself too expensive. The flake foods found favour with nearly all the common and hardy fish like clowns and damselfish, and my dwarf angel and regal tang also take flake food readily. It is not, regrettably, universally taken by the butterflies, and contrary to the claims of advertisers I found that no single dried food in any form could be relied on to appeal to all members of any given tank. Thus, if you were in a hurry to get to a party in the evening and hurled in a pinch or two or a tablet or two of dried food you would almost certainly leave a

itself, and nothing should be cut away at any obvious pressure points.

If the pool has been prepared properly, though, there should not be any great danger: the main thing to avoid is running the pockets of plastic liners too near to the water edge, at which point the material is particularly vulnerable to the combined seasonal attack of sun, frost, wind and the pressure of ice. The pockets should not be equidistant one from the other, and should be apportioned as informally as possible. If you wish to drag the eye away from a particular spot, position, say, three pockets quite near to it and fill them with particularly arresting plants.

As to plants themselves, much will depend on your locality, but there are two which have universal appeal and are so hardy that even the worst gardener need have no fears. The first is the variegated periwinkle (*Vinca*), and the other is aubretia, which comes in staggering hues of red, purple, blue and pink. The former has a pretty blue trumpet-shaped flower and a white and green blotched leaf. I once made a vow that I would never recommend this plant to anyone because it is one of the most rampaging blighters I know, but as I looked at my own pond recently in the spring sunshine I realised how very fitting it is for an edging. It throws out underground runners which intrude themselves everywhere and you have to watch them like a hawk if you are to confine the plants to where you want them. But that's gardening—you can't have it all ways. If anyone has a large lorry passing my way about once a week I can let them have about three tons of the stuff each time. A local nursery sells it at nearly 50p a pot—I wish I knew how to get in on this particular pantomime!

Aubretia is so well known that it is absurd to attempt to describe it in detail. What is not so well appreciated is that it is very easy to grow from seed, and that it will bloom the first year without any sort of expert treatment. All it seems to need during its first season is a fair amount of moisture, which is becoming less and less of a problem with British summers.

Both the above plants are perfectly hardy and will grow over the pond edge right into the water, especially the *Vinca*, which will often produce underwater plantlets at considerable distances from the parent. The *Vinca* needs trimming with shears in the spring to induce fresh growth—the old trailers are best cut away because of their tattiness after the long winter months, during which they preserve a semblance of the past season's pleasures long after most other plants have succumbed to the rigours of wind and frost. Aubretia should also be trimmed with shears after flowering, and by this means may often be persuaded to yield two or three flowerings in a good year.

I have mentioned the two basic plants for edgings, as quite apart from their function as workhorses they will do their job come rain come drought, come what may. There are scores of other, choicer, things which can be put by the poolside, but few of these will work quicker than these two. If having served their immediate purpose, they are ousted by others which catch your eye, they are inexpensive enough to be uprooted and thrown away without too many qualms, though if you happen to have bought them from my local garden centre at that absurd price, and therefore hang on to them for longer than I have suggested, I could hardly blame you.

What's New?

Graded Grains

A FISH food on which the inhabi-

tants of a community tank can feed simultaneously has the advantage of allowing all the fishes to obtain a fair share of the food, whether they swim in the upper, middle or lower reaches of the tank. A fish food graded into 'bite sizes' is a further move to ensure the satisfaction of the tank inhabitants. For these reasons the manufacturers of **Promin Tropical Fish Food** (Promin Ltd., Manor Lane, Holmes Chapel, Cheshire, CW4 8AB) have produced a fish food in the form of three different sizes of granules, some of which will float and some sink down to the lower depth dwellers. The food's analysis gives a very high protein content (58%), to produce rapid growth in the fish, and eight main vitamin sources are present. Experi-

mental work done at Promin's fish house, say the manufacturers, has shown that fish fed exclusively on this new food can come into permanent breeding condition. Packed in brightly coloured plastic drums (green for fine food, orange for medium and yellow for coarse), the food's recommended price of the standard size (1½ oz. approx.) is 40p and the breeder's pack (2½ oz.) is £3.30. Attractively packed samples of the food, attached to explanatory cards, are available free from retailers.

Unobtrusive Internal Filter

HOWEVER many advances may be

made in the major equipment for central tank filtration the popularity of the small internal filter remains unchanged. Not has it been neglected by the designers in recent years. Each new version tries to reduce the amount of the filter visible to the eye without interfering with ease of maintenance. Hobby Products of Bonn (distributed in this country by Impelec Ltd, 89-89A Park Street, Slough, Bucks.) are now introducing the **Gully Filter**, the only visible part of which is the air-lift pipe—yet the filter media can still be changed in a few seconds. The base of the filter is a round bowl or tub that is pushed down into the substrate until its rim is level with the top of the gravel. Then into the

bowl can be pressed the circular filter cartridges containing polymer wool, peat or charcoal, one on top of the other if required. The manufacturers state that it is not necessary even to turn off the air while the replacement is being made! The recommended retail price is £2.04 and replacement bowls are 21p.

Dietary Delicacy

A NEW food delicacy guaranteed to quicken the digestive juices of any freshwater tropical, goldfish or marine fish, and that will cause no domestic problems when stored in the house-

hold fridge, are the **Fish Eggs** being distributed in this country by T.F.H. (Great Britain) Ltd. (13 Nutley Lane, Reigate, Surrey). The flat round tins, packed in Norway for worldwide distribution by the American firm of Miracle Pet Products Inc., contain 1½ oz. of pure cod fish eggs. There are no additives, the major solid constituent being pure protein with small amounts of fat, fibre and mineral. Unopened, the tins keep indefinitely. Once opened the tin should be kept in a refrigerator but will cause no problem as it is accompanied by a replacement plastic cap and a small plastic spoon for serving the eggs. The recommended price is 40p plus V.A.T.

MARINIST'S Notebook

By ROY PINKS

IT has often been averred that the differences between fresh and saltwater fishkeeping are so fundamental that experience in the former could almost be regarded as a form of constraint upon the latter. I wonder how many marinists would go along with this view? For my part I have encountered a number of basic differences, certainly, but so long as one is aware of their nature and extent the problems likely to arise may be kept at a minimum.

There are the obvious differences such as cost, and it will be found that a factor of three and above is the minimum you are likely to get away with: in other words, if your freshwater activity works out at about 40p per fish it will cost £1.20 to switch to marines. This includes running costs, food etc., but the per unit cost will vary widely from individual to individual. Work it out some time. As in assessing the cost of running a car, you will probably be amazed at how the money goes, but if you decide, as a result of this exercise, to effect economies, then dispense with the car (an altogether happier solution and socially more praiseworthy than cutting down on your fish).

So far as prospects for the marinist are concerned, there is an enormous potential for the study of saltwater life, but the practicability of breeding fish for commercial sale or private enjoyment is at present almost non-existent. There will be large rewards for anyone who evolves a reasonably

simple technique for breeding even the commoner marine species. Not only do we have to persuade the fish themselves to become parents, but we have also to evolve some way of enabling the fry to get a real grip on life during their first few weeks of existence. The former difficulty is exacerbated by the almost universal feature that only the fish know who is male and who is female, a propensity regrettably now extending also to fishkeepers themselves. The marinist is therefore more of a spectator than his freshwater counterpart, and he will find it less easy to control the behaviour of his charges.

The field of marine invertebrates offers a study all of its own, and if a tank is set aside, free of fish life, a quite remarkable world in miniature is exposed, in which microscope and magnifying glass play a major rôle. The life forms are apparently almost unlimited, and their habits are so unlike anything else, that one does indeed get the impression that one is beginning afresh in a quite new hobby. This particular branch of the cult is growing in popularity and gives special scope for the quiet and serious student, who will realise that it will hold little by way of financial reward yet exposes wide scope for careful research. In particular the study of mobile forms of life most likely to provide food for fry of various size groupings may unlock the door to the breeding of marine fishes on a wider scale than has hitherto proved possible.

Europe's Federations Meet in



Prominent announcement of an aquaria and terraria display at the Pavillon Josephine Orangerie, Strasbourg

French Federation (FFAAT) was Host to other European Federations at Strasbourg and Nancy this Summer

Photographs by
DAVID ALLISON

WHEN the FÉDÉRATION FRANÇAISE DES ASSOCIATIONS D'AQUARIOPHILIE ET DE TERRARIOPHILIE (FFAAT) held its first Congress at Strasbourg and Nancy in June of this year, one of the declared intentions of the Organisers was to make the occasion a real opportunity for representatives of the different European Federations to meet together. Britain's Federation (the EBAS) was represented by Mr Tom Glass (to whom we are indebted for this report), accompanied by Mrs Glass. A party from Hendon AS (Mr David Allison, Miss Yvonne Longuet, Mr K. Purbrick and Mr and Mrs H. Watts and son) also attended the Congress. Together with representatives of the Dutch, Polish, German and Belgian Federations, these visitors from the

U.K. were to spend a most enjoyable and interesting 4 days with their French hosts, from the first official Reception at the Town Hall in Strasbourg and welcome by Monsieur Schellenberg, retiring president of the FFAAT, to the final dinner with the new president, Professor B. Coudé, of the University at Nancy.

The Congress lectures were held on the Saturday in the Pavillon Josephine in the Parc de l'Orangerie, a large park which housed a small zoo as well as the Congress buildings.

Part of the Pavillon near to the Meeting Hall was given over to a fine display of fish and reptiles.

Mr Tom Glass reports that the lectures and slides that followed were uniformly excellent and included a talk on the keeping and breeding of reptiles in the terrarium by Dr G. Metz of the University of Nantes, a lecture by Professor R. Geisler of the University of Fribourg on collecting blue disease from the Amazon, a lecture by Mr J. P. Trivi, vice-president of the Cercle de L'Aquarium Strasbourg



The official 'twinning' ceremony at which the president of the French Federation and of the Nancy Society, Professor B. Coudé (left), presented a diploma to the president of Hendon & DAS, Mr Keith Purbrick

France



FBAF Council Member Mr Tom Glas (left) with Professor B. Conde, president of the French Federation in a Strasbourg restaurant

on *Apistogramma* and one by Professor B. Conde of the University of Nancy and the newly elected President of the French Federation on keeping coral fishes. Finally a film by Mr and Mrs H. Fleisser on the Red Sea proved to be a magnificent film record, which is apparently being translated into English for showing in British Universities. The day ended with a most enjoyable dinner for all the delegates.

On Sunday the Congress transferred to Nancy to the Aquarium of



Aquaria on a staircase at the superb Aquarium at Nancy.

the Zoological Museum of the University where Professor Conde conducted the visitors round, in Mr Glas's words, 'easily one of the best public aquariums that I have seen'. On arriving at the Town Hall in Nancy for the Mayor's reception visitors were greeted with a song in honour of the Congress and an exhibition by local art students of the *École nationale des Beaux-Arts de Nancy* on the theme of the Aquarium.

Lunch on this day also saw a

ceremony at which our own Hendon & DAS was 'twinned' with the Aquatic Society in Nancy. At this gifts were exchanged and a Diploma signed by the Mayor of Nancy and Professor Conde was presented to Hendon AS members.

Finally a lecture by Monsieur P. Schaumburg, Keeper of the Natural History Museum in Geneva on 'The Threatened Waters of the Earth', linked the aquarist's world with the larger ecological problems of our age.

The sincerity of the delegates' thanks to their French hosts stressed what an immensely valuable contribution was made by the Federation Française to a fruitful exchange of ideas and knowledge among European aquarists.



Tokens of Le Jumelage

The Diploma (left) presented to Hendon & DAS during the Congress reads 'Le Cercle Aquariophile de Nancy and Hendon DAS celebrated on Sunday 17 June 1972 at the Hotel de Ville Nancy the ceremony of inception of their twinning and is signed by the Mayor of Nancy and by the presidents of the Nancy and Hendon twin societies. On the right is shown the magnificent wall plate given to Hendon members by the Nancy Society



Care and Cultivation of *Aponogeton ulvaceus*

By J. ELIAS

Photographs
by the author



An aquarium specimen of *Aponogeton ulvaceus* with flower stem seen above the leaves

APONOGETONS have become particular favourites in the aquatic hobby, not only for their decorative qualities but also for their rapid, luxuriant growth and undemanding nature. Whilst plants that propagate by seeds are often passed over for the 'livebearing' species, it would be a pity if one of the most beautiful, *A. ulvaceus*, should be overlooked.

The plant comes from Madagascar and is mainly found in still, clear rivers. The bulbous rootstock measures up to 1½ in. (3 cm.) across. The leaf stalk is 8-20 in. (20-50 cm.) in length, according to the depth of water, and tapers gradually into the leaf blade. This is long, rounded on top and an almost translucent green colour with distinct membranes. The edges are slightly corrugated. Typical of the species is the twisting together or spiralling of the

leaves. In favourable conditions the leaves twine themselves all over the water surface, often covering it completely. The yellow flower stem has two to five 'ears' or spikes. The seeds are small and develop by themselves in the aquarium.

The failure to keep or cultivate this plant successfully is not due only to the more usual problems of insufficiency of light or conditions not conforming to those in its native waters: failure is chiefly due to not permitting the plant to have a rest period when growth stops. These plants really do seem to require a dormant period between the months of January and March at a temperature below 60° F (15° C). Such a 'wintering' state, with a gradual lowering of the temperature, cannot, however, always be easily provided by the aquarist. The first flower stem appears in May or June;

there is a second flowering in September to November but in the autumn the seeds often fail to mature.

When the plants are left dormant they often lose all their leaves and of course it is very difficult to assess then how they are progressing or even whether they are decaying. But if the aquarium is completely undisturbed, without fishes, the leaves do not always drop though they will become brittle and lose their bright green colour. Once the temperature is turned up and the lighting restored the plants should spring into life in about 2 weeks.

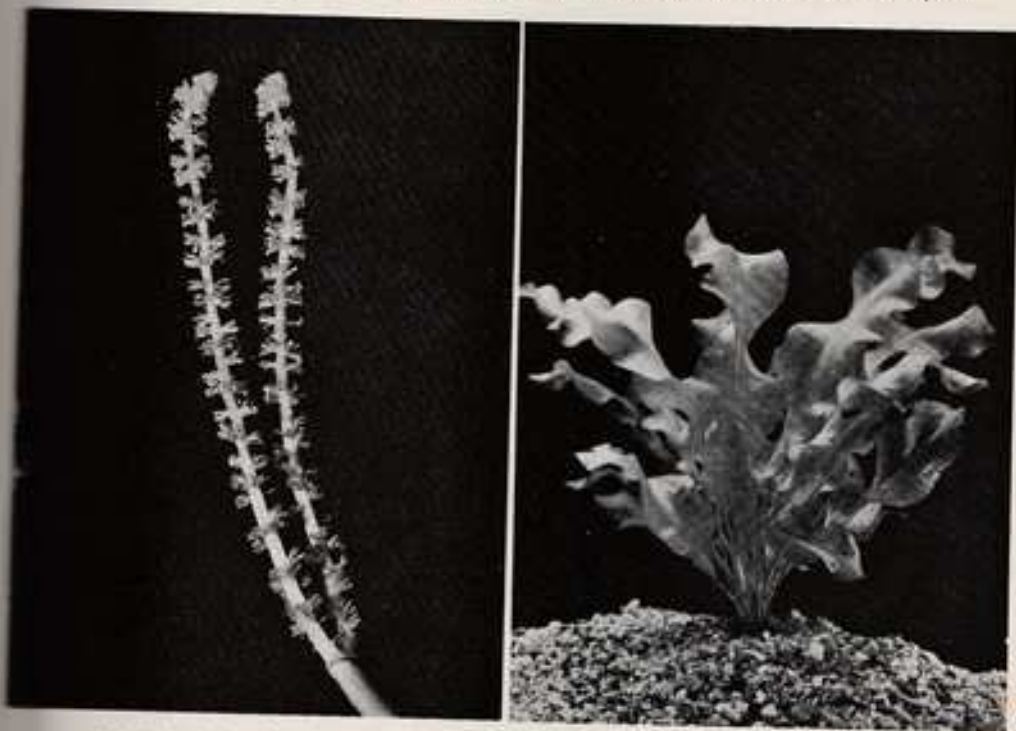
It is possible to pollinate the plants by hand. It can occur by accident whilst the aquarium is being cleaned out but a fine paint brush can be used to transfer the pollen. For the seeding and the first few days of growth of the minute plants it is better to provide a minimum water level.

Daylight is the best form of lighting for *A. ulvaceus* (though direct sunlight can produce an excess of algae), but this is something that aquarists can only rarely provide. However, the plant can be kept perfectly healthy in artificial light; fluorescent

lighting is preferable if the flowers are to be preserved as with tungsten bulbs the air space between the water surface and the tank hood is likely to become too warm and the blossom will shrivel and die.

Skilful crossing with other aponogetons such as *A. ulvaceus* × *A. crispus* or *A. ulvaceus* × *A. fenestratis* has created many beautiful hybrids. Recently a rather inferior aponogeton with short leaf stems (3-4 in., 8-10 cm. long) has appeared. Its leaves are broad and spiralling rather like *A. ulvaceus* in appearance. It has been described as *A. elongatus*, which it is most unlikely to be; rather it is a hybrid. Although like *A. ulvaceus* in appearance, it is possible to see the difference when the plant flowers. The flower of the 'inferior' aponogeton produces only a single 'ear'.

The aquarium water should not be excessively hard for this plant and the temperature, except during the dormant period, should be maintained at 68°F and over (20°C). A good growing temperature I can recommend is 75°F (24°C). The plant will quickly settle into a large aquarium and with suitable conditions will last for several years.



Left, enlarged view of the flower of *A. ulvaceus*. Right, a hybrid plant formed by artificial crossing of *Aponogeton* species ('artistic hybrid')

Readers' Queries Answered



Autumn Feeding

Are there any special foods I can feed my pond fish on in the autumn? I think they've done very well anyway this summer but I want to start to feed them up from early September for the winter. I usually have a good supply of earthworms but this year the dry weather has resulted in an absolute dearth of these.

Earthworms are, of course, an excellent food to give goldfish and some will almost certainly have found their way into the pond throughout the summer without human aid, but the fish will also enjoy other garden-produced foods such as caterpillars, wood lice or crushed slugs. Gentles can be obtained for them, brown bread will be highly acceptable and feeding with one of the scientifically prepared foods for coldwater and pond fishes that are now on the market will all help to replace the insect life that the fish have been enjoying this summer.

Live Food Oddities

I have a very good supply of bloodworms available to me in a local pond but there are also a lot of very unpleasant-looking beetle-like insects left in the net after every sweep. What would these be and if one should accidentally get into a tank would it hurt the fish?

The pond you are using will certainly be carrying a large population of water beetles, their larvae and the larvae of other creatures that are winged in their adult form. Many of these are carnivorous, such as dragonfly larvae and the water tiger. Naiads of some of the largest dragonflies even eat tadpoles. One of our contributors, Mr J. Lee, has stressed in his articles on fish foods and feeding that even these creatures may be used to vary the diet of

certain species of fishes—the centre of their bodies is soft and the panchax group of killifishes delights in eating them. However, they must on no account be added to tanks containing small fish or fry and unless you are sure that some particular fish in your tank is going to enjoy them it is best to follow the maxim—when in doubt leave it out!

Unfamiliar Names

There are some orandas being offered for sale locally under the names Tanchō and Azuma Nishiki. Does this refer to the coloration—the Azuma Nishiki are calicos and the Tanchō red caps.

It is not possible to be at all dogmatic about this. It would seem likely that the Japanese exporters are using the terms to denote colouring only, Tanchō being a Japanese crane with a white body and a red crest or marking on its head. But, according to Dr Yoshiichi Matsui (goldest guide: Pet Library Ltd.), Tanchō, apart from denoting a colour variant of coloured carp is the name used in Japan for the redcap (Chinese, Hon Tou), developed in China and about which he writes: "These fish should be all white, except for the top of the head, which should be bright red. In the best varieties, the fish have a well-developed red hood. It seems to be a fairly new variety and there is great variation in body shapes, fin lengths and presence or absence of the dorsal fin, which seems to indicate that standards for the fish have not yet been fixed". Azumani-shiki, on the other hand, again according to Dr Matsui, are 'one of the new varieties of Japanese goldfish' developed by crossing orandas and the calico telescope-eyed goldfish Sanshoku Demekin. (Although the standard body shape is some-

what more compressed than that of the oranda, the common name for this fish is calico oranda. Like the oranda, it has a hood development on its head which increases in size with age.

Spawning in the Community

I have a pair of P. kribensis in my community tank and I think they are getting ready to spawn. Is it likely that they will do this in a community tank and is it going to cause havoc to the other tank inhabitants?

Pelvicachromis pulcher, as it is now correctly called, may very well spawn in the community tank—under a rock, against a propped-up slate or within a sawn-off flower pot—and without danger to the rest of the tank inmates. It really depends how seriously you want to take the spawning, whether you make provision to prevent a number of possible disasters that could happen if they spawn in the community tank, but equally well may not happen at all. The parents can eat the spawn, can quarrel viciously (resulting in the death of one or the other), can kill their young if they are preparing to spawn again, or can experience great difficulty in rearing the fry at all in the disturbing conditions of a community tank. To guard against such eventualities the pair would have to be spawned in a separate tank and one parent removed once the fry are free-swimming. But none of these things may happen and some of the fry could survive quite unharmed in the community tank.

Too Much Duckweed

My pond, about 6 ft. square, is now completely covered with duckweed in quite a thick layer. Should I remove some or is it quite harmless to the fish? I believe they like to eat it although they do not seem to be making very great inroads into it.

It is not a good idea to keep too thick a layer of duckweed on the pond's surface. Certainly the fish will eat some of it but goldfish, for instance, are unlikely to eat their way through a 2-in. layer of it! A thin layer of duckweed provides a certain amount of necessary surface

shade during the summer months, but some sunlight is beneficial to the fish, and plants beneath the surface can die off if the surface vegetation becomes too dense. In the autumn, dead or dying duckweed sinks to the bottom of the pond and excess then helps to create the conditions that result in pollution if the pond should ice over and the gases from rotting plants be caught beneath its surface. Fortunately it is not a difficult matter to remove duckweed and a surface-skimming with a net will remove the unwanted plant.

Dwarf Botia

I recently noticed the appearance in a local shop of a tank of fish by the name of dwarf botia. I am interested in purchasing some of these fish and am appealing to your infinite wisdom for information concerning the care and possible breeding of them.

Hastily disclaiming the 'infinite wisdom', we suggest it is likely that the botias in your local shop are *Botia sidthimunki*, the species that is usually called the 'dwarf loach' (back brown, sides light yellow or silvery, dark flecks on tail and sides with light marks running the length of the fish along its upper half). The fish was only introduced into Europe at the end of the 1930s, so descriptions of it do not appear in much of the standard literature. It is the smallest of the botias that we know and grows to only about 1½ in. in length; it is a peaceful little fish and is generally described as 'playful' because it tends not to hide as much as some of the botias do during the hours of 'daylight'. A temperature of about 75°F (24°C) is suitable, with soft water (well aerated and not acid), plants and rockwork in which to rest, and live food (small foods such as whiteworm, daphnia, brine shrimp, are ideal). The breeding of these fish is not recorded.

Moor Coloration

I wonder if you could explain the reason why a teleocopic-eyed moor, kept in a 2 ft. community tank, should lose its black-bronze colour. It has gone from a black to a goldfish body with black finnage. I believe this to be caused by a change in the pigmentation and, if this is correct, could you please explain the reason why this has occurred, because I have another moor in this tank and I should like to

prevent, if possible, the same thing happening again.

The change in the pigmentation of your moor is a natural, and not unusual, phenomenon. The moor is but one of the fancy goldfish varieties that have been cultivated from the common goldfish and the black coloration achieved is not irreversible. The intensity of black pigment varies from fish to fish (the greater the depth of colour the more valued the fish, of course); the black colouring does not begin to appear until 7 or 8 weeks after the fish has hatched, and with age it is not unusual for a black fish to revert gradually to bronze or even to an orange-reddish colour. The change is not due to water conditions or feeding for instance, and it may well be that the other moor in the tank will retain its black colouring.

New Arrival

I recently bought a moor goldfish which, when bought, held her fins clear of the body. But she refused to eat and the next day her dorsal fin dropped. Her faeces turned white so I gave her a bath in Epsom salt solution and now she holds her fins clear of the body but

still refuses to eat. I offered her tubifex worms and some dry foods but she won't touch it. How can I remedy this please? I should mention that her faeces are again black in colour.

We would suspect that your moor is already eating again, since the symptoms indicating less than perfect health are no longer present. Particularly if the moor is a small one the change in habitat and living conditions would be enough to put it off its food temporarily. Water conditions in your tank may well differ considerably from those in the tank the fish came from; and, like other youngsters of the round-bodied fancy varieties of goldfish, moors are very susceptible to chilling. Aquarium water for newly imported small moors should be at a temperature of not less than 60°F (15°C) and when first introduced into its new home the fish should have been floated in its new tank for half-an-hour or so before being released. Possibly, also, the fish was reacting to a new diet consisting of foods different from those it was used to. The best food of all for encouraging a fancy goldfish to resume feeding is tiny, or chopped, earthworms.

Book Review

FRESHWATER FISHERS. A Concise Guide in Colour. J. Vozradovsky. 252 pages, 88 pages of illustrations. Hamlyn, London 1973. 75p.

FIRST and foremost this book is written for the fisherman but the 'coldwater aquarist' should try not to be put off by that. There are, it is true, 18 or so waded pages on flies, baits, plugs and reeds and a pre-occupation in the text with body weights and the willingness or otherwise of each fish to surrender to the angler's technique, but the colour illustrations and general notes make this an interesting and useful reference book on fishes of the U.K. In the book's Introduction it is written 'Fishermen want to know as much as possible about nature in order to preserve it and also to take pleasure in it through relaxation'. Why this desirable taking of 'pleasure' and 'relaxation' in natural surroundings should have at its centre the clumsy killing of living

animals without their use as food is never made clear by the advocates of this so-called 'sport'. However, it is true that in this book the culinary values of the fishes, with remarks on their preparation for the table, are included, so perhaps the author combines his love of the countryside with the utilitarian aspect.

A GUIDE TO FRESHWATER AQUARIUM FISHERS. George F. Hervey and Jack Hens. 176 pages, 64 half-tones, 50 colour pictures. Hamlyn, London, 1973. £2.75.

FOR more than 20 years, since the first publication of their *THE GOLD-FISHES*, the Hervey and Hens co-authorship has at intervals gone into action like a well-oiled machine, with the polished production of yet another title for the book lists. This time the indomitable pair take aquarium fish as their subject again and in their preface declare their intention to omit 'trivialities'; they say that the book is for the reader who 'will already have some knowledge of the subject'. In view of this statement I

found the text disappointing, and I think that 'the aquarist of some experience . . . who needs an authoritative work of reference on the subject' (from the cover 'blurb') will find it so too. Unfortunately, since the authors have not set out especially to appeal to the beginner the book will, in its skimpy discussion of techniques, for example, disappoint him as well. (An 'authoritative work' cannot cover under-gravel filtration in 72 words and conclude that 'some say . . . it deprives the plants of food at their roots'; I, for one, would claim to be an ichthyologist—they are practical aquarium-keepers and as such do not have very much to say that is new or illuminating for the practising fish-keeper on the fishes they have discussed so readably.

It does seem that in many ways the authors have not done what they keep promising to do. In the diseases section they say 'we prefer to cut the subject down to size' and in the next paragraph but one treat us to some

seventeenth century nonsense on 'constipation' and 'purging' of aquarium fishes. Like the 'fatty degeneration of the heart' (page 23), 'constipation' in fish is a bit of archaic nonsense directly derived from archaic human medicine, repeated from book to book for years. There is a touch of the dan past, too, in the mention of an operation involving a 'bone knitting needle' (page 28). The statement in the section on lighting that 'biologically the light is filtered through glass' had me guessing, and I wondered on what authority it is written that 'fishes cannot digest fat' and why the authors think that 'mineral salts, carbohydrates and protein' are essential 'in that order' for the health of fishes.

The illustrations are pleasing and I did enjoy reading the text, strangely enough most of all for what I would call the trivialities—such as the fact that willow moss was once used in Sweden to pack the air space around chimneys, the remark that the name of *Apiragramma cacatuoides* is 'onomatopoetic' and the discovery that fishes have 'quiddities'.

A. E.



FBAS Basic Show Class Letters:
A, furnished aquaria and aquascape;
B, Barb; **C,** characin; **D,** cichlid;
E, labyrinth; **F,** egg-laying tooth-carp;
G, tropical catfish; **H,** Corydoras and Brochis; **J,** rasbora;
K, danio and W.C.M.M.; **L,** loach;
M, a.o.s. tropical egg-layers; **N,** pairs of fish; **O,** guppy male; **P,** guppy female;
Q, swordtail; **R,** platy; **S,** mollie; **T,** a.o.s. livebearer; **U,** singletailed goldfish; **V,** twintailed goldfish;
W, a.o.s. coldwater; **X,** breeders' classes; **Y,** marine fish;
Z, plants.

ATTENDING a recent meeting of **HASTINGS & ST LEONARDS AS** was a large lizard that sat and stared suspiciously at the audience throughout the evening. It was but one of the interesting specimens that Mr J. Webster (MBAS) took with him when he lectured to the Society on reptiles and amphibians. Adders, grass snakes, slow worms, newts, lizards and frogs, all safely secured in plastic bags, were passed amongst the members for examination. Mr Webster spoke of the danger of extinction to native wild life with the disappearance of its natural habitat owing to building and told how he collected these creatures from the danger areas and placed them in nature reserves in Essex. Another enjoyable meeting was the occasion of the talk by Mr R. Forder (FBAS) on aquarium plants, demonstrated with coloured slides and plants which were afterwards auctioned for club funds. The table show for guppies (judge, Mr P. Harbord) was won by Mrs & Miss French and that for danios and minnows (judge, Mr Bellingham) by Mr & Mrs Adams. The club has also held its first Garden Pond Competition. Mr Jolliffe (Bexhill) judged and Mr B. Funnell filmed the ponds for a showing at a future meeting.

ENTRIES from Canada were among the 655 benched at the **TONBRIDGE & DAS** second Open Show. Over 100 competitors from 26 clubs entered and against this competition Kent aquarists Mr & Mrs Scates of Erith AS won the trophy for Best fish

Midland Aquatic Show



This filling station won first prize for Lucas APS at the Midland Show. The idea was by 13-year-old Andrew Roberts, son of MAAS secretary Mrs D. A. Roberts. Second in the society display competition was Delson AS and British Marine Aquarist Association came third

DERBY REGENT AS is on the move again and though a date has not yet been decided, another seminar is planned. It is intended probably to make this closer to a true seminar and if so the admission charge might have to be as much as £2.00.

The Society are also about to set up a slide library and interested societies are invited to send a stamped, addressed envelope for details when available to: Mr J. Bland, 5 Cumberhill Road, Duffield, Derby. The Society would be prepared to handle the distribution of material prepared by other societies.

The film and slide list prepared for the FNAS is now in the hands of the printers and should be available shortly. If anyone knows of material suitable for inclusion would they write to Mr Bland at the above address and details can be included in the amended list to be published in early 1974.

in show and the Characin trophy with a *Nannostomus trivirgatus*. They also won the trophy for Corydoras. Home-team winners were Paul Brown (Angel trophy) and Dave Purchard (sox-egg-layer trophy and Cichlid trophy). Other major trophy winners were: Mr & Mrs Crutchbank (Ealing, Barbs and Danios), Miss & Mrs Coyle (Independent, Labyrinths and Small characins), Mr C. Marsh (Medway), Mr E. McQuade (IBC, Ontario, Biunese fighters), Mr B. L. Wright (Thurrock, killifish and Catfish), Mr P. Cottle (NKAS, Seesd pairs), Mr D. Emery (Mid-Sussex, Guppy), Mr C. Elliott (Medway, Livebearer), Mr R. Parker (NKAS, Coldwater), Mr G. E. Dixon (Newbury, Breeders) and Mr J. Marshall (Medway, Plants).

Ba 1, Mrs D. Crutchbank (Ealing); 2 & 3, Mr J. Bellingham (Tonbridge); Ba; 1, Mr E. Coyle (Independent); 2, Mr J. Marshall (Medway); 3, Mr J. M. London (Thurrock); C 1, Mr & Mrs T. Scates (Erb); 2, Mrs R. Coyle; 3, Mr C. P. Marsh (Medway); Ca; 1, Mrs B. Coyle; 2, Mr S. W. Applein (Indep); 3, Mrs D. Crutchbank; D 1, Mr D. R. Purchard (Tonbridge); 2, Mr G. E. Dixon (Newbury); 3, Mr J. W. P. Hughes (Basingstoke); Da; 1, Mr P. V. Brown (Thurrock); 2, Mr G. E. Dixon; 3, Mr P. W. Coyle (NKAS); Db; 1, Mr C. P. Marsh; 2, Mr R. Newman (Basingstoke); 3, Mr



J. W. P. Hughes; E 1, Mrs R. Coyle; 2, Mr P. O'Bryan (Thurrock); 3, Mrs F. Sewford (Basingstoke); K; 1, Mr E. McQuade (Int. Bara Cong); 2, Mr S. W. Applein (Independent); 3, Mr G. M. Buzner (Dunbury); F; 1, Mr R. L. Wright (Thurrock); 2, Mr & Mrs Gimes (MKAS); 3, Mr J. H. Jackson (Basingstoke); G; 1 & 2, Mr B. L. Wright (Thurrock); 3, Mrs F. Lambourne (Roehampton); H; 1, Mr & Mrs T. Scates; 2, Mr P. A. Moore (Sudbury); 3, Mr L. E. Brazier (Sudbury); I; 1, Mr P. Coyle; 2, Mr C. Wood (NKAS); 3, Mr P. A. Moore; K; 1, Mr T. A. Crutchbank (Ealing); 2, Mrs L. Bellingham; 3, Mr P. O'Bryan; L; 1, Mrs

T. Coyle; 2, Mr & Mrs Gimes (MKAS); 3, Mr L. J. Brazier; M; 1, Mr D. R. Purchard; 2, Mrs R. Coyle; 3, Mr P. A. Moore; N; 1, Mr P. W. Coyle; 2, Mr J. Bellingham; 3, Mr L. J. Brazier; No; 1, Mr C. Elliott (Dunbury); 2, Mr E. A. Holmes (Basingst); 3, Mr R. Robinson (Lewisham); O; 1, Mr D. Emery (MKAS); 2, Mr R. J. Chapman (East); 3, Mr J. M. London; P; 1, Mr & Mrs Maughy (Greenford); 2, Mr E. A. Holmes (Basingst); 3, Mr C. Green (NKAS); Q; 1, Mr D. R. J. Livermore (Thurrock); 2, Mrs A. M. Adams (Basingst); 3, Mr A. F. J. Sest (Basingstoke); R; 1, Mr P. O'Bryan; 2, Mrs M. J. Wall (Thurrock); 3, Mr J. M. London; S; 1, 2 & 3, Mr I. M. London; T; 1, Mr C. Elliott (Medway); 2, Mrs D. Crutchbank; 3, Mr J. H. Jackson; U; 1 & 2, Mr H. C. Jones (Thurrock); 3, Mr V. E. Vally (NKAS); V; 1, Misses G. & S. Jackson (Basingstoke); 2, Mrs A. M. Adams (Basingstoke); W; 1, Mr R. Parker (NKAS); 2, Misses J. Matthews (Tonbridge); 3, Mrs D. Crutchbank; X; 1, Mr G. E. Dixon; 2, Mr T. B. Adams; 3, Mrs M. J. Wall; X; 1, Mr A. Heath (Lewisham); 2, Mr P. O'Bryan; 3, Mr C. Elliott.

FEDERATION



NEWS

Championship Show Results and Forthcoming Shows

Championship Class Show Results

Tonbridge	Ba	Mrs R. Coyle (Independent)
Croydon	Cb	Mr L. J. Brazier (Sudbury)
Bethnal Green	Ca	Mrs B. D. Scates
Riverside	Da	Mr John Batts (Ealing)
Corby	Db	Mr W. Hickman (Dudley)
Southend, Leigh	Dc	Mr D. M. Dare (Independent)
Kettering	Dz	Mr J. H. Dainry (Kettering)
Vauxhall Motors	Ea	Mr A. Taylor (Sudbury)
Half Moon	Er	Mr D. Keighley (Stockton)
Roehampton	G	Mr D. Lambourne (Roehampton)
Independent	H	Mr W. D. Wright (E. Dulwich)
Port Talbot	J	Mr E. Eameshaw (Taunton)
Medway	L	Mr J. Parker (N. Kent)
Havant	Mz	Mr R. Halsey (Basingstoke)
South Shields	Nb-m	Mr H. Hubbard (Peterlee)
Wellingborough	O	Mr A. Creer
Dunrow	P	Mr A. P. Taylor (Sudbury)
Basingstoke	T	Mr A. Lushby (Mid-Herts)
Llandwit Major	U	Mr & Mrs W. P. Johnson
Uxbridge	Xo-t	Mr R. Newman (Uxbridge)
Portsmouth	Xop	Mrs J. Lamboll (Portsmouth)
Yeovil	Xu-w	Mr D. S. Langdon (Yeovil)

Forthcoming Championship Class Shows

6th October	E. London A & PA		
7th October	Ealing AS	S	Mollies
28th October	Newcastle Guppy & LBS		

*Winners of Federation Championship Trophies in classes for single fish automatically become eligible for the Supreme Championship Trophy Competition (to be staged at The AQUARIUM SHOW '73 at the Royal Horticultural Society's Old Hall, London, S.W.1, 2nd-4th November). Six awards are made at this Competition.

SUNDERLAND @ DAS. Would ex-members or interested parties willing to help re-form the society please contact: Mr R. South, 13 Wignore Avenue, Fulwell, Sunderland, Co. Durham.

AT the Annual General Meeting of the **BRITISH KOI KEEPERS SOCIETY** held in July, U.K. subscription rates for the next year were fixed at £1.50 for single membership, £1.75 for married couples. Anyone interested in joining the growing ranks of successful koi-keepers is welcome to join; send your subscription at the above rate to the General Secretary, Mrs H. M. Allen, 1 Anthony Close, Peterborough, PE1 3XU (phone: 0733 67997).

Z: 1 & 2, Mr R. C. Jason; 1, Mr J. W. F. Hughes; Za: 1, Mr J. Marshall; 2, Mr C. Elliott; 3, Mr P. O'Hagan.

A TALK by FRAS judge and lecturer Mr Roy Fox on 'Fishes of the Cichlid Family' (with particular reference to species from the genera *Aequidens* and *Cichlasoma*) gave particular pleasure to members of **HOUNSLOW & DAS** as many of them are keen cichlid collectors. Mr Fox illustrated his talk with slides and as each fish was projected on the screen a description of its natural environment and its requirements in the home aquarium was given. Mr Harry Towell (FRAS) judged the table show classes for barbs and coldwater fish. Although the holiday season meant that entries were lower than usual Mr Towell's subsequent 'run-down' on the bonched fish was much appreciated. Visitors are very welcome to attend meetings (8.0 p.m., alternate Wednesdays, St Stephens Church Hall, Whitton Road, Hounslow, or phone secretary Mr H. Parish at 01-892 5091).

NEW FOREST AS were hosts at the most recent round of the Inter-Club competition with Bournemouth and

THE BRITISH KOI KEEPERS SOCIETY, who will be making a Display Stand at The Aquarium Show this year, will be holding a meeting of the Society at 2.30 p.m. on Sunday, 4th November in the Rhododendron Room of the Royal Horticultural Society's New Hall (a minute away from the Old Hall, where the Aquarium Show is held). It is hoped that as many prospective new members as possible will be able to visit the Show to meet the members of the BKKS and that there will be a really good attendance at the meeting.

Salisbury AS. The classes were *Corydoras* catfish, barbs, and danios and minnows. The judge (FRAS) was Mr D. V. Jones of Southampton, and Bournemouth AS achieved first place in each class, with the result that they won the round with 18 points (Salisbury, 8; New Forest, 4). An inter-club quiz was also held, conducted by Mr D. Harding who had compiled the questions; this was certainly Bournemouth's night as they won the quiz too, scoring 52 points to Salisbury's 45.

ONCE again the **DORCHESTER & DAS** Fish Show proved a great success with 148 entries compared with 136 last year. Judges were Mr P. Jefferies of Bournemouth and Mr P. Carter of Weymouth. His worshipful the Mayor of Dorchester, Mr L. Phillips, presented the trophies. There were 17 tropical fish classes, three coldwater classes, a breeders' class and one for furnished aquaria. Results were:

Bahia: 1 & 2, Mr G. Froggessell; 3, Mrs L. Norman; Characins: 1, Mr R. W. Taylor; 2, Mr R. Voss; 3, Mrs H. Cressell; Angels: 1, Mr R. W. Taylor; 2, Mr R. Christopher; 3, Mr D. Norman; Cichlids: 1, Mr R. W. Taylor; 2, Mr G. Fox; 3, Mr A. Worth; Siamese fighters: 1, Mr M. Cressell; 2, Mrs G. Worth; 3, Mr R. Christopher; Labridae: 1, Mr R. W. Taylor; 2, Mr N. Davies; 3, Mr A. Worth; Catfish: 1, Mr H. W. Corrick; 2, Mr R. W. Taylor; 3, Mr A. Worth; Cyprinids: 1 & 2, Mr D. Norman; 3, Mr R. Christopher; Rainbow: 1, Mr R. Christopher (Blue tropical fish); 2, Mr D. Norman; 3, Mrs H. Cressell; Danios & minnows: 1, Mrs H. Cressell; 2, Mr M. Cressell; 3, Mr A. Billington; Sea Eagles: 1, Mr M. Cressell; 2, Mrs L. Norman; 3, Mrs G. Worth; Pairs: 1, Mr M. Cressell (Glossogobius); 2, Mrs G. Worth (G. pulchellus); 3, Mr R. Voss (P. iridipennis); Mide guppy: 1, Mr M. Cressell; 2 & 3, Mrs G. Worth; Female guppy: 1, Mrs M. Fox; 2, Mr R. Christopher; 3, Mr M. Cressell; Gouramis: 1, Mr A. Worth; 2, Mr R. Christopher; 3, Mr A. Billington; Paria: 1, Mr R. Christopher; 2, P. Jefferies; 3, Mr R. Voss.

Common goldfish & comets: 1, Mr R. Christopher; 2, Mrs H. Cressell; 3, Mrs M. Fox; Shubunkins: 1 & 2, R. Christopher (Best coldwater fish); 3, Mr G. Fox (golden rudd); 5, Mr R. Christopher (golden orfe); Breeders: 1, P. Jefferies (Trichopterus longicaudus); 2, Mr A. Worth (White Cloud Mountain minnow); 3, Mrs L. Norman (mosquitofish); Furnished aquaria: 1, Mrs W. Voss; 2, Mrs G. Worth; 3, Mr M. Cressell.

THE SOUTH WESTERN GROUP of the **BRITISH MARINE**

AQUARISTS ASSOCIATION reports that it has been decided in future not to hold meetings during the months of June, July and August since 75% of the members are involved in seasonal employment giving very poor attendances at meetings. The report continues: 'Members present (at the home of the Group secretary, Mr Lewis Doubleday) were able to see the successes of his efforts with bottled drop nets from the walls of Torquay Harbour, main attractions being several *Blechnus gatoragines* (Tun-Pots), *Thorogobius ephippiatus* (leopard spotted goby) and *Labrus mixtus* (cuckoo wrasse).

We in the South West were very impressed by the Stand that the London Group had made. Slides taken at the Basingstoke Show not only showed the excellent Stand but also portrayed Peter Ireland and Bruce Wilkinson at work signing new members.

The venue for the bi-annual dinner to be held in mid-November was agreed upon as the Harbour Lights, Paignton (no hungry boxes here!). We are pleased to see Sue Fiddock back in the fold and trust that her recent sojourn in hospital has helped her recovery.'

THE CATFISH ASSOCIATION (G.B.) has recently been formed to promote more interest in these fishes. It is the intention of the Association to provide the information that is lacking through the media of a quarterly magazine, plus bi-monthly meetings. It is further intended at these meetings to run a table show plus lectures on catfish and to hold general discussions.

On 31st March 1974, the Association will be holding an Open Show. With the Federation of British Aquatic Societies' approval, classes G and H will be split into 18 different sub-classes. The Association invites interested prospective members to meet them at **THE AQUARIUM SHOW** at the Royal Horticultural Society Hall this year, where they will be staging a display, and to obtain more information from secretary Mr N. Sanford, or write to him at 65 Burlington Road, New Malden, Surrey; phone 01-049 1707. Show secretary is Mr D. Lambourn, 7 Wheeler Court, Plough Road, London, SW 11 2AX; phone 01-223 2630.

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ABERDEEN AS played host to the fifth East of Scotland Clubs' & Societies' Annual Show held at the end of August. 360 entries were received from members of 12 clubs as far north as Inverness and as far south as Edinburgh. A quite remarkable number of the Aberdeen general public also visited the Show—well over 1000! This was, in fact, rather more than the organisers had expected and when the fish room was thrown open, after judging, there was as much congestion, reports P.R.O. Mr George Rodger 'as in a tin of sardines!' Fortunately, this did not last long and, once the crowd thinned out, it was possible to view the fish in comfort. The huge numbers ensured that the event was a great success for the Aberdeen AS who were organising the Show for the first time ever. The best fish in the show was a *Labeo erythrura* entered by Mr J. Kelly of Dundee and the Society pointings were: 1, Perth; 2, Arbroath; 3, Aberdeen; 4, Dundee.

Fishes (8 entries): 1, Mr R. Gordon (Arbroath); 2, Mr N. Macdonald (Perth); 3, Mr J. MacLennan (Forfar). *Swordtails* (18): 1, Mr G. MacRae (Inverness); 2, Mr R. Troup (Aberdeen); 3, Mr E. Davidson (Arbroath). *Burbs 'A'* (18): 1, Mr J. Davidson (Arbroath); 2, Mr P. Smith (Arbroath); 3, Mr R. Tringham (Gleerethes, B. Inverness). *Burbs 'B'* (18): 1, Mr N. Macdonald (B. Inverness); 2, Mr D. Strachan (Aberdeen); 3, Mr R. Gordon (Arbroath).



Mr M. Clark (Perth). *Cyprinodontichthys alpinus*. *Sharks* (12): 1 & 2, Mr J. Kelly (L. erythrura, *L. bicolor*); 3, Mr J. McPherson (Perth, *L. Maderi*). *Egg-laying cyprinids* (6): 1, Mr G. Ross (Aberdeen); 2, Mr M. Clark (Aberdeen); 3, Mr J. Henderson (Perth). *Sh. gubari*. *Swordtail fighters* (14): 1, Mr P. Smith; 2, Mr J. Thomson (Edinburgh); 3, Mr P. Deans (Forfar, Dundee). *Guppies* (12): 1, Mr L. Forreth (Perth); 2, Mr & Mrs Gordon (Arbroath); 3, Mr J. Finlay (Burr & D.). *Guppies under 1 in. (6)*: 1, Mr N. Macdonald; 2, Mr P. Smith; 3, Mr L. Forreth. *Guppies over 1 in. (6)*: 1, Mr L. Forreth (*Tetodon nana*); 2, Mr W. Davidson (Edinburgh); 3, Mr L. Forreth (*T. nana*, golden variety); 4, Mr W. Clarke (Aberdeen); 5, Mr W. Davidson (Edinburgh). *Large cichlids* (25): 1, Mr W. Clarke (Aberdeen); 2, Mr P. Smith (Edinburgh); 3, Mr W. Davidson (Edinburgh). *High Valley cichlids* (7): 1 & 2, Mr D. Morgan (Aberdeen); 3, Mr G. Ross (Aberdeen). *Haplochromis bartoni*. *Dwarf cichlids* (21): 1, Mr J. MacLennan (Forfar); 2, Mr J. & E. Howe (Arbroath); 3, Mr G. Forreth (Edinburgh). *Pol. ichthys*. *Guppies* (18): 1 & 2, Mr H. McPherson (Perth); 3, Mr P. Deans (Mullis); 4, Mr R. Troup; 5, Mr L. Mitchell (Forfar); 6, Mr T. Green (Murray). *Characins 'A'* (14): 1, Mr E. Cunningham (Perth); 2, Mr J. Hay (Aberdeen); 3, Mr J. Hay (Aberdeen). *Heterostichus* (*Heterostichus*). *Characins 'B'* (12): 1, Mr K. Moss (Aberdeen); 2, Mr A. Cunningham (Perth); 3, Mr G. Ross (Aberdeen). *Gymnocorpus* (*Gymnocorpus*). *Characins 'C'* (16): 1, Mr L. Mitchell (Forfar); 2, Mr J. Kelly (Aberdeen); 3, Mr A. Stewart (Forfar). *Hyacinth rooters*. *Rubras* (17): 1, Mr C. Davidson (Burr & D.); 2, Mr G. Forreth (Dundee); 3, Mr G. Forreth (Dundee); 4, Mr G. Forreth (Dundee); 5, Mr G. Forreth (Dundee); 6, Mr G. Forreth (Dundee); 7, Mr G. Forreth (Dundee); 8, Mr G. Forreth (Dundee); 9, Mr G. Forreth (Dundee); 10, Mr G. Forreth (Dundee); 11, Mr G. Forreth (Dundee); 12, Mr G. Forreth (Dundee); 13, Mr G. Forreth (Dundee); 14, Mr G. Forreth (Dundee); 15, Mr G. Forreth (Dundee); 16, Mr G. Forreth (Dundee); 17, Mr G. Forreth (Dundee). *Coldwater fish* (5): 1 & 2, Mr J. Thomson (Edinburgh); 3, Mr T. Bishop (Edinburgh). *Brooders livebearers* (4): 1, Mr R. Mies Gordon (Arbroath); 2, Mr J. McPherson (Aberdeen); 3, Mr E. Davidson (Arbroath). *Livebearers* (10): 1, Mr D. Morgan (Aberdeen); 2, Mr P. Deans (Forfar); 3, Mr J. Hopkirk (Forfar); 4, Mr J. Hopkirk (Forfar); 5, Mr J. Hopkirk (Forfar); 6, Mr J. Hopkirk (Forfar); 7, Mr J. Hopkirk (Forfar); 8, Mr J. Hopkirk (Forfar); 9, Mr J. Hopkirk (Forfar); 10, Mr J. Hopkirk (Forfar). *Ass* (11): 1, Mr J. Middleton (Arbroath); 2, Mr A. Cunningham (Perth); 3, Mr A. Cunningham (Perth); 4, Mr A. Cunningham (Perth); 5, Mr A. Cunningham (Perth); 6, Mr A. Cunningham (Perth); 7, Mr A. Cunningham (Perth); 8, Mr A. Cunningham (Perth); 9, Mr A. Cunningham (Perth); 10, Mr A. Cunningham (Perth); 11, Mr A. Cunningham (Perth).

Perth, *Chondryx* (*Chondryx*). *Characins 'C'* (16): 1, Mr L. Mitchell (Forfar); 2, Mr J. Kelly (Aberdeen); 3, Mr A. Stewart (Forfar). *Hyacinth rooters*. *Rubras* (17): 1, Mr C. Davidson (Burr & D.); 2, Mr G. Forreth (Dundee); 3, Mr G. Forreth (Dundee); 4, Mr G. Forreth (Dundee); 5, Mr G. Forreth (Dundee); 6, Mr G. Forreth (Dundee); 7, Mr G. Forreth (Dundee); 8, Mr G. Forreth (Dundee); 9, Mr G. Forreth (Dundee); 10, Mr G. Forreth (Dundee); 11, Mr G. Forreth (Dundee); 12, Mr G. Forreth (Dundee); 13, Mr G. Forreth (Dundee); 14, Mr G. Forreth (Dundee); 15, Mr G. Forreth (Dundee); 16, Mr G. Forreth (Dundee); 17, Mr G. Forreth (Dundee). *Coldwater fish* (5): 1 & 2, Mr J. Thomson (Edinburgh); 3, Mr T. Bishop (Edinburgh). *Brooders livebearers* (4): 1, Mr R. Mies Gordon (Arbroath); 2, Mr J. McPherson (Aberdeen); 3, Mr E. Davidson (Arbroath). *Livebearers* (10): 1, Mr D. Morgan (Aberdeen); 2, Mr P. Deans (Forfar); 3, Mr J. Hopkirk (Forfar); 4, Mr J. Hopkirk (Forfar); 5, Mr J. Hopkirk (Forfar); 6, Mr J. Hopkirk (Forfar); 7, Mr J. Hopkirk (Forfar); 8, Mr J. Hopkirk (Forfar); 9, Mr J. Hopkirk (Forfar); 10, Mr J. Hopkirk (Forfar). *Ass* (11): 1, Mr J. Middleton (Arbroath); 2, Mr A. Cunningham (Perth); 3, Mr A. Cunningham (Perth); 4, Mr A. Cunningham (Perth); 5, Mr A. Cunningham (Perth); 6, Mr A. Cunningham (Perth); 7, Mr A. Cunningham (Perth); 8, Mr A. Cunningham (Perth); 9, Mr A. Cunningham (Perth); 10, Mr A. Cunningham (Perth); 11, Mr A. Cunningham (Perth).

THE new FNAS badge is now available, in one of five different colours bearing the badge as a motif (silver grey for officials; judges, maroon; lecturers, green and ordinary members, navy blue). The cost is 5p for a tie and 10p for a badge and they are available from Mr D. Glen, 18 Nuttall Avenue, Whitefield, Bury, Lancs. (phone: 051-255 8352).

In Brief . . .

... MEMBERS of WEYMOUTH AS took full advantage of the presence of lecturer and FBAS 'A' class judge Mr R. Matley to ask him various questions after his talk on fishkeeping. Mrs V. Worth won the table show class for aas egg-layers and Mr J. Fancey that for loaches and botis. New auctioneer Mr D. Kelly did a very good job raising funds for the Society at the auction. Chairman Mr D. Rogers and Mr G. Fitzgerald were thanked for setting up a display tank at Weymouth's 'Big Affair' that had attracted much attention and several enquiries from prospective new members.

... SUFFOLK A & PA members were treated to a very much appreciated lecture by Mr M. Birch from Mickfield on water gardens, with slides of the development of a water garden. Mr Birch answered questions and altogether created a successful, informative and entertaining meeting. Mr Auffret won in both the labyrinth and aas classes at the table show.

... THERE would appear to be a growing interest in the breeding and exhibiting of guppies, judging by the new

members enrolling at most of the last few meetings of the MANCHESTER SECTION of the FGA. Interest has been maintained with slide shows, lectures and talks and discussions. The meeting on 4 November, at the usual venue of Longnigh Hotel, rear entrance to Belle Vue, 2.30 p.m., is the Section's Open Show.

... A TALK and slide show on coldwater fishkeeping by Mr Frank Toyne of Sheaf Valley AS provided an interesting evening for GAINSBOROUGH AS members. Mr Toyne also judged the table show, passing on to his listeners his knowledge of how to select young fish for showing. Mr & Mrs R. Harris won in the classes for killifish and pairs of livebearer, Mr & Mrs W. D. Gilding the aas, and J. & M. Brumby the pairs of livebearers, juniors, class.

... PRIVATEERS (SHIPLEY) AS members found the film show and talk on marines recently given by Mr P. Mosehouse of Huddersfield most informative and enjoyable.

... BURY ST EDMUNDS & DAS will be hoping to attract new members when their Fish Exhibition is held on 8th December at the Oddfellows Hall, Whiting Street, Bury St Edmunds (doors open 10 a.m. to 5.30 p.m.).

... **HIGH WYCOMBE AS** has had its usual busy programme over the last few months with speakers on such disparate subjects as fish photography and tortoises. The annual Open Show produced the usual crop of 'Open Show headaches' but was considered a success by all. It has been decided to open the club to junior members over 14 years of age. Those interested are invited to contact the secretary at Penn 3825 or attend a meeting at the White Horse, Oxford Road, High Wycombe on alternate Thursdays.

... **AT** the last monthly meeting of the **BIRMINGHAM SECTION** of the **FGA** (4th Sunday of month, The Glebe Farm Community Centre, Stechford), show secretary Mr D. Beacham gave a slide show of the beautiful overseas and home exhibits at this year's FGA World International, together with slides of the preparatory work, such as collecting the overseas entries from London Airport. Five new members were welcomed. Major award cards were: Best female wedgetail, Mr B. Beacham; Best male cofertail, Mrs J. Croft; Best breeder, best in show with breeders pairs, Mr R. Jones (winning his first two silver cards).

... **DERBY REGENT AS** staged two very successful exhibitions at the British Rail Carriage and Wagon Works and the British Rail Locomotive Works, Derby. These were part of B.R. Open Days, which attracted many thousands of people. The Society's stand was composed of a cottage with pond and fountain sur-

rounded by plants and shrubs and many tanks of tropical and coldwater fish.

... **AMERSHAM & DAS** welcome visitors at their meetings. On 3rd October a three-way match will be held with Hemel Hempstead and Borehamwood AS; for 17th October, a discussion among members on fishkeeping gadgets is scheduled; 7th November, a speaker from the Thames Conservancy Board has been engaged.

... **BRACKNELL AS** have been both guests and hosts recently—entertained by Hendon & DAS with an excellent slide show on cichlids of the African Continent and host for the Three Counties Quiz League in August (results: Bracknell 33, Basingstoke 69, High Wycombe 65, Didcot 52, Reading 48).

... **WHEN** Mr Don Curry, chairman of the **EDMONTON SECTION** of the **FGA**, presented the July awards he particularly congratulated the winners on their achievements in so short a time as all were comparative newcomers to the hobby: Mr A. James, Breeders Diploma; Mr & Mrs B. Burnell, gold badges; Mr P. Bussey, silver badge. At this table show Mr & Mrs Don Phillimore won the Best male, Best female, Best Exhibit awards, Mr A. James the Best breeders. Anyone interested in the fancy guppy will be very welcome at meetings on the first Sunday of the month at The Royal British Legion Hall, Holtwhites Hill, Enfield.

Dates for Your Diary

6th October. **EAST LONDON A & PA** Open Breeders Show. Schedules: Mr F. Vicker, 13 Irons Way, Collier Row, Romford, Essex.

6th October. **CARDIFF AS** 7th Open Show. St Margaret's Church Hall, Waterloo Road, Roath, Cardiff. Schedules: Mr C. Turner, 146 Arran Street, Roath, Cardiff.

7th October. **EALING & DAS** Open Show. Hanwell Community Centre, Cockno Lane, Greenford, Middlesex. Schedules: Mr John Batts, 90A Valetta Road, Acton, London, W.3. FBAS Trophy Class S.

7th October. **HINCKLEY & DAS** Open Show. Heathfield High School, Belle Vue Road, Earl Shilton, Leicestershire. Details: Mr T. Saunders, 29 Browning Drive, Leica.

7th October. **FGA Edmonton Section** Open Show. The Royal British Legion Hall, Holtwhites Hill, Enfield, Middlesex. Benchmark 2.0-3.30 p.m. Details: Mr D. Phillimore, 103 Wilbury Way, Edmonton, London, N18 1BX; phone 01-803 2012.

13th-14th October. **FNAS BRITISH**

AQUARISTS FESTIVAL at Belle Vue Gardens, Manchester.

13th October. **ANSON AC** Open Show. Sydney Memorial Hall, Willenden High Road, London, N.W.12. Schedules: Mr D. Oliver, 199 Doyle Gardens, Harlesden, London, N.W.12.

21st October. **SHERWOOD AS** Open Show. Thoresby Miners Welfare Hall, Edwinstowe, nr Ollerton, Mansfield, Notts. Schedules: Mr J. Igoe, 25 Marple Avenue, Mansfield-Woodhouse, Notts, NG19 9BY (phone: Mansfield 32249).

28th October. **DONCASTER & DAS** Open Show. Brodsworth Miners Welfare Hall, Welfare Road, Woodlands, nr Doncaster.

2nd-4th November. London's Sixth Annual Exhibition of Fishkeeping: **The AQUARIUM SHOW '73** at the Royal Horticultural Society's Old Hall, Vincent Square, London SW1. Enquiries to Show Organiser, PFM, 554 Garratt Lane, London SW17 6NY.

3rd November. **GSGB** Quarterly Meeting. Conway Hall, Red Lion Square, Holborn, London, WC1, 2.30 p.m.

4th November. **MIXENDEN TFS** Open Show. Mixenden Community Centre, Clough Lane, Mixenden. Schedules: Mrs J.

Pool, 18 Chester Terrace, Halifax, Yorks, HX3 6LT.

4th November. **FGA Manchester Section** Open Show. Longsight Hotel, Sooton Carew, Belle Vue, Manchester. 2.30 p.m. Details: Mr D. Glen, 16 Nuttall Avenue, Whitefield, Manchester, M25 6QA.

11th November. **HARTLEPOOL AS** Open Show. Longsight Hotel, Sooton Carew. Details: Mr J. Watson, 42 Sodenham Road, Hartlepool, Co. Durham, TS26 9BW.

11th November. **WALTHAMSTOW & DAS** Open Show. Details to be announced.

17th November. **GSGB 25th Anniversary** Dinner Dance. Details: Mr A. Lawson, 68 Gordon Road, Enfield, Middlesex.

24th November. 1973 **HENDON CONGRESS**.

1st December. **FBAS** Assembly. Conway Hall, Red Lion Square London WC1, 2.30 p.m.

2nd December. **HORSFORTH AS** 4th Open Show. New Civic Hall, Stanningley, Pudsey.

5th December. **BURY ST EDMUNDS & DAS** Exhibition of Fish. Oddfellows Hall, Whiting Street, Bury St Edmunds. Doors open from 10 a.m. to 5.30 p.m. Refreshments available.

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GOLDFISH SOCIETY OF GREAT BRITAIN STANDARDS BOOK. Revised (1972) 40-page publication. Standards for 13 approved fancy goldfish varieties, illustrated in line. 40p post paid. PF Publications, 554 Garratt Lane, London, SW17 0NY.

TORTOISES, TERRAPINS & TURTLES by I. and A. Noël-Hume. 112 pages, 13 plates, 19 line drawings. 30p. PetFish Publications, 554 Garratt Lane, London, SW17 0NY.

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359 Oxford Road, Reading
Th F open till 8 Sun 10-12
Trop F Coldwater F
Marines (Whol & Ret)

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Bourne End Aquarium
(Bourne End 25100)
24 Furlong Road, Bourne End
Daily till 5.30 Th 7-9
Sun 11-1 3-5 Closed W
Trop F Coldwater F Plants Equip

CAMBRIDGESHIRE

Finland Tropical Centres
(Witch 6945 & 2075)
29 Norwich Road, Witch
M T Th F 9-1 2-5.30
S 9-5.30 Sun 2-5.30
Trop F Coldwater F Native
Marines Trop Marines (Whol & Ret)
Equip Books (Ret)

DERBYSHIRE

Terry J. Aquatics
(Derby 21335 & 23716)
129 St Thomas Road, Derby DE13RH
M T W 2-8 F 9.30-8 S 9.30-7.30
Sun by appt
Trop F Plants Equip Marines

DEVON

Barrington Aqua Centre
(Barnstaple 2203)
The Square, Barnstaple
M 2-6.30 T 10-6.30 W Th F S 10-8
Trop F Coldwater F
Plants Equip Books

DORSET

Peter Mardon Aquatic, Pet
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24 High East Street, Dorchester
(tel: 3678)
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Equip Books Pond Installations
W. gardening

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187 Northgate, Darlington
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Rep & Amphib Plants Access Pools etc

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Harlow Aquarium Supplies (20098)
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Bournemouth
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Trop F Pond F Plants Equip

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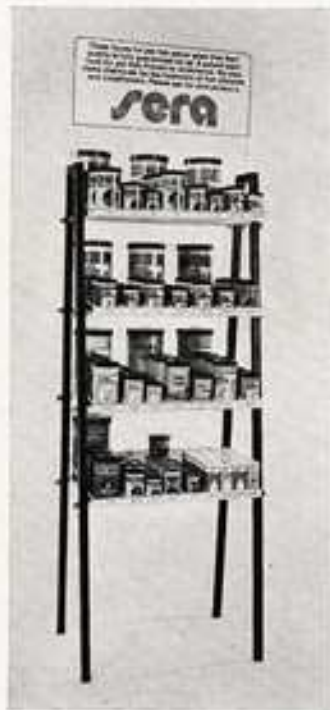
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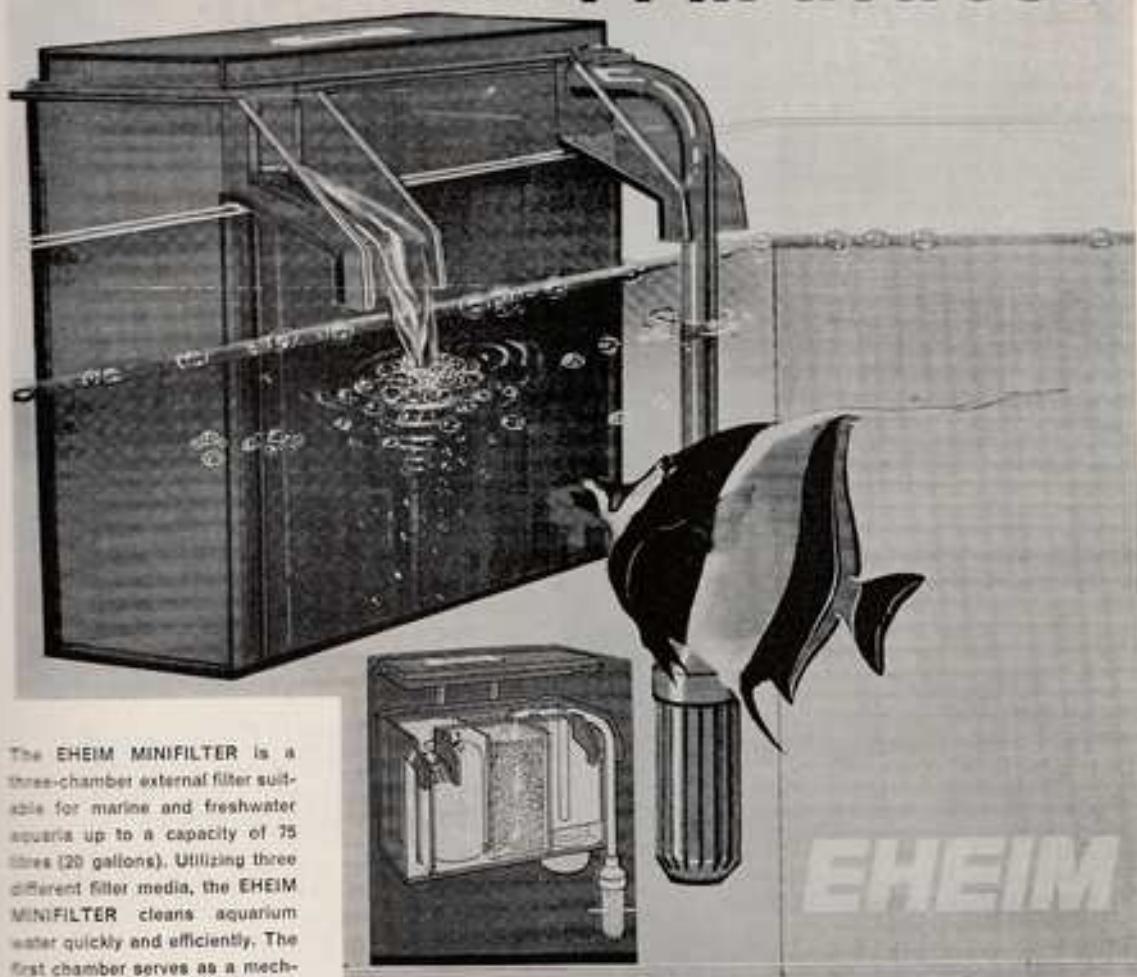
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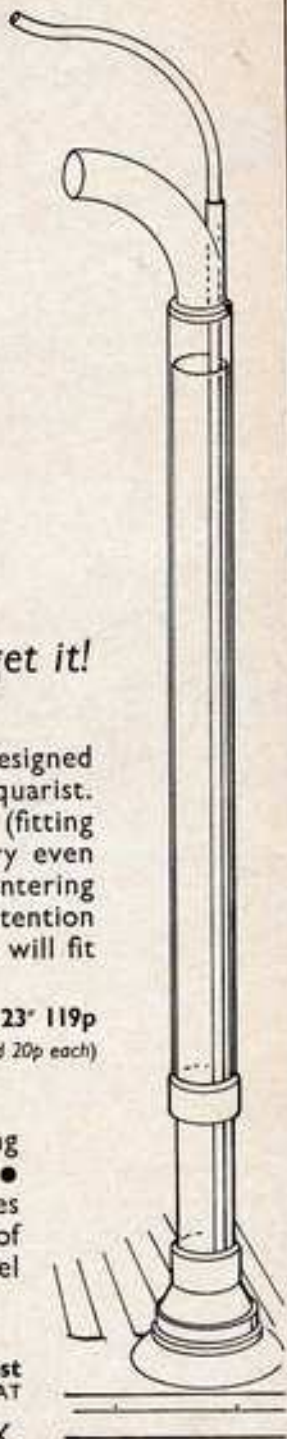
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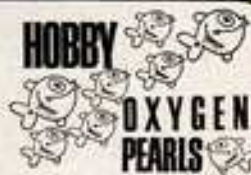
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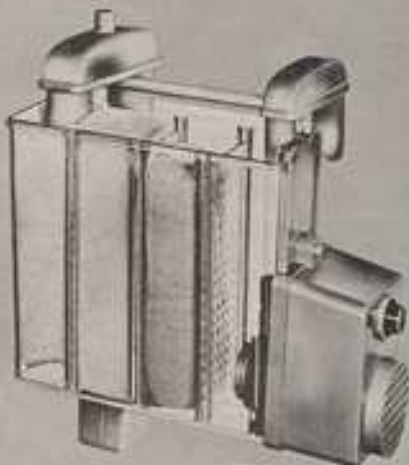
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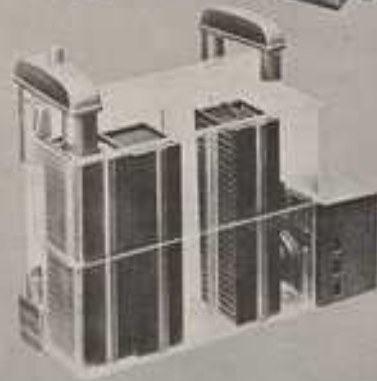
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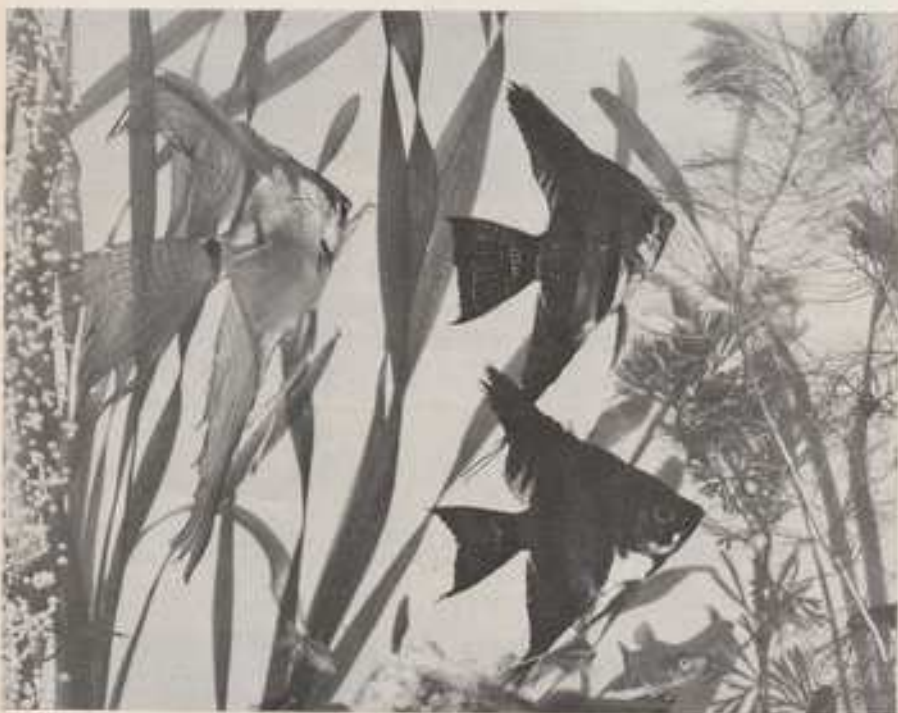
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