Comments and Quotes

- Two aquatic surveys
- Research into fish diseases
- Photography at shows
- New oceanarium for London

Numbers and Quality

THE lack of available statistics in connection with the aquatic hobby is a continuing source of amusement to the non-aquarist. Prospective authors, journalists, manufacturers, advertisers and budding social science graduates regularly come to us with requests for exact figures for fish kept, bred, sold, imported, for details of clubs, club members, proportion of adults to children, female to male enthusiasts and so on. The truthful answer has usually to be that in detail so many of these statistics are just not available. All the more to be welcomed therefore by the statistically minded are the results of two recent surveys published by the Federation of British Aquatic Societies in their Bulletin.

Mr Frank Tonkins, chairman of the FRAS Judges and Standards Committee, undertook a most interesting survey of the facts and figures gleaned from 19 Open Shows held in 1971. The largest number of single fish entries were cichlids (classes D, Da, Db)—675, (a fact that Mr Jim Burley, secretary of the new British Cichlid Association, has already hastened to point out to us). Characins (classes C, Ca) followed closely with 671 entries, barbs came next with 516 entries and labyrinth were fourth (classes E and Ex) with 512.

The second survey, conducted by Tetramin (U.K.) Ltd., was an analysis of the replies to their questionnaire sent in by nearly 80 societies. This also showed that cichlids topped the list of fishes kept, followed by livebearers, carps, characins and labyrinth and with mailed catfishes a distant sixth.

Another aspect assessed in the FRAS survey was the quality of fishes at the Shows studied. Mr Tonkins collected the detailed opinions of the various judges for the Shows and applied a points system for evaluation: excellent, 10; very good, 9; good, 7; average, 5; fair, 3; poor, 2; very poor, 1. The figures finally arrived at for quality were the averages of all the above assessments for the Shows.

The results show that the class consistently maintaining the highest quality throughout the year was class H, Corydoras, with class D, Cichlids, as the next best single class. Only two single fish live bearer classes were average or above (5 points). Mr Tonkins, commenting on these findings, writes: 'What has happened to those line bred fishes developed by man during the past? I feel that it is a very sad comment on the present-day aquarist in general; it shows that he prefers to buy natural fish rather than to breed the domesticated varieties'.

Although undoubtedly the simplest method of collecting mass information is through the cooperation of aquarists' societies, it does have to be remembered that since these constitute a rather specialised sample the results do not necessarily give a picture of the Average Fishkeeper. For example, we wonder how dealers would rate cichlids in the sales league? But by all means let's see some more fact collecting about our hobby—facts make such a refreshing change from opinions.
Fish Diseases

A SOMETHING gloomy picture of the lack of technical interest in some of the fishkeeper's problems, particularly in the field of fish pathology, was painted in these columns a couple of issues back. Since then it has been encouraging to receive news of ventures in this country that aquarists could regard as steps to advance knowledge in this field. One item is the announcement of a special grant by the Nuffield Foundation of £76,000 to the University of Stirling to establish a Unit of Aquatic Pathobiology there. The University already provides teaching and research facilities in the field.

A Fish Diseases Research Unit of the Ministry of Agriculture, Fisheries and Food at Weymouth is equipped and nearly ready to go into action; it is thought to be the first laboratory in Europe to be specially fitted out for the study of fish diseases. The Zoological Society of London is also developing a Unit of Fish Pathology.

There is no doubt that the work of these centres, although in its applied approach primarily intended to benefit economic fisheries and wealthy angling interests, should produce much that will be of use by the aquarium hobbyist as well.

If the aquarium fish trade could only make its problems known in the right quarters there might be hope that the urgent need of a diagnostic service for the diseases of fishes and advances in aquarium therapeutics would come to be met. As we noted in our earlier Comment, we think that the benefits of cooperation could be mutual for the trade and the fish research scientists.

Photography at Shows

HOW diligent should show secretaries be in stopping the photography of fishes on the benches before judging? A call for stricter enforcement of the ban of pre-judging photography at the Belle Vue British Aquarists' Festival has been made, and in the Newsletter of the Federation of Northern Aquarium Societies two instances of 'near-disasters' that led to the introduction of the ban are recalled.

Use of photoflood lighting on one occasion raised tank water temperature to a dangerously high level and at another time a large barb was sent hurtling round its tank when a flash photograph was taken. It is unusual for fishes to react nervously to electronic flash but—as the FNABS writer asks of photographers:

"Wouldn't you be annoyed if some idiot startled your fish while taking a picture so that it split a fin or lost a couple of scales and this dropped those few points that make all the difference between a good fish and a champion?"

Most people, we are sure, would react understandingly if the possible results of their actions were pointed out to them, although we can recall seeing some ugly scenes at a large cage birds show when owners tried to control photography by persistent visitors. The comfort and well-being of the animal being exhibited is really the prime consideration and in all matters touching this the owner and the show secretary should speak with one voice.

New London Oceanarium

AN 'oceanarium' is being planned for the Cutty Sark Gardens, Greenwich, as part of the development of the district as a tourist area. It will include modern aquaria, a small dolphin pool and a cafeteria and will provide for a riverside walkway. It is hoped to open the oceanarium by Easter next year when GLC landscaping and other work should be complete.—EVENING NEWS.

LETTERS

Perplexing Cat

I S anyone able to give me some explanation of the behaviour of one Corydoras juli catfish? Some months ago I purchased two small tiger barbs and introduced them into my community tank, which contained two red swords, one red-finned shark, two keyholes, one flying fox and one C. juli.

I sat back to see how my new tiger barbs settled in their new surroundings, when I noticed that the C. juli started to chase the female barb around the tank at great speed. At this stage I took no notice—the only thing I could put it down to was the fact that the female barb must have given the catfish a nip, which they are quite fond of doing. With this thought in mind I took no further notice of the incident, but what took place next day is as follows: the juli cat showed all signs of breeding behaviour. I was fascinated by this as I have never heard or seen anything like it before. The cat was trying to mate with the female tiger barb. However, at last this behaviour stopped and I had a good laugh at the whole affair.

I wish I could say that was the last of the incident, but alas, no, it was not. Last week I visited my local dealers to purchase two orange chromides. I was in luck—the dealer had a tank full and I bought two young specimens. I made my way home, feeling very pleased with these young

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

Continued on page 561
AQUARISTS TAKE US FOR GRANTED!

The quality of Heating Equipment tends to be taken for granted by many aquarists. There, perhaps we at Interpet are at odds with this trend because we've devoted a considerable amount of effort to the research and development of consistently reliable heating equipment.

We use the finest quality heat resistant glass tube for all heating products. Top quality nickel chrome wire — single coil wound for long term reliability — is used on a specially developed support for all heaters. Interpet's electronics division has also pioneered a number of advances in materials technology to produce the first British Mini heaters and thermostats. All our thermostats use a metal or compression moulded chassis to avoid distortion and silver contacts for optimum performance. They are easily adjustable and the larger model incorporates an integral neon warning light.

Mini-Heaters and thermostats are for the small aquarium only. 4-in long and 5-in diameter. Range of heating wattages from 25 to 150w and the thermostat has a capacity of 200w. Ideal for use in centrally heated locations.

Hi-Duty Heaters provide rugged reliability and consistent output. Available from 50w to 150w — two heaters are recommended where larger wattages are necessary.

Steady Start — Larger thermostats with integral neon light with a capacity of 300w.

Mechanics and Minimatic — combined heater thermostat factory adjusted to suite everything at 70°F. Easily adjustable, these units incorporate all the major specifications of our separate heaters and thermostats in a single unit.

Buy Interpet Heating Equipment next time — and join the fast growing ranks of Aquarists who take us for granted!

Interpet cares about aquarists.

INTERPET – DORKING – SURREY

Please mention PFM when writing to advertisers
When you pay less for their food your fish will eat better.

When you work it out, Phillips Fish Foods cost about half the price of other comparable flaked foods. Yet they’re the best you can buy.

Best because of the nourishing things that go into them. Because of their high protein content. Their correct balance of vitamins and minerals. And they cost less because they’re made right here in Britain.

So there are no import charges or big transport costs. They also come in a range. So you can give your fish a frequent change of diet. (They like that as much as you do.)

So, if you’re not already feeding them the best, change to Phillips right away.

Phillips Fish Foods
Phillips Yeast Products Ltd.
Flaked Fish Food
A special blend of liver, fish and meat meals, insects, crustaceans, vegetable matter, brewers' yeast, milk powder and cod-liver oil, for tropical and cold water fish. Tropical: Drum 12p. 1½ oz 25p, 4½ oz 58p, 18oz £1.76. Cold water: Drum 11p. 1½ oz 23p, 4½ oz 53p, 18oz £1.60.

Cold Water Granules
A highly nutritious scientifically formulated mixture for feeding cold water fish. In drums. 11p.

Maxiflakes
Another scientifically balanced staple food, specially designed for hand feeding large tropical and cold water fish. 1½ oz 35p.

Multifreeze
A 100% freeze-dried mixture of seven nourishing foods, that retain the full nutritional value of live foods with the convenience and cleanliness of dried food. In drums. 28p.

Aquatabs
Made to press on the side of the tank so you can enjoy watching the fish feed themselves. Contain freeze-dried roe, shrimp, liver, beef heart, spinach and lettuce, cod-liver oil, milk powder, brewers' yeast and seven vitamins. They come in tubes of 24. 15p.

-the best that cost less.
Pork Royal Road, London, N.W.10.

"I saw your advertisement in PFM"
Display well and **SELL** with

**JOHN HUTCHINSON FISH DISPLAY TANKS**

IN 4, 6, 8 or 12 TANK UNITS

Each unit is fully self-contained and comes complete with all equipment needed for tropical or cold water fish.

A VERSATILE UNIT FOR THE AQUARIST SHOP or NURSERY GARDEN

All units are completely equipped with lighting and are free standing on adjustable feet.

**MAIL ORDER**

Aquarist supplies by return post. Answer all your needs for tropical fish keeping from your armchair. Complete the coupon on the opposite page for full details.

Free Tropical Fish Care leaflet with every order!
Any three items post free.

Please mention PFM when writing to advertisers
JUST A FEW OF HUNDREDS OF MAIL ORDER ITEMS AVAILABLE FROM
JOHN HUTCHINSON

Airline Bargain
60ft. coil
Only 50p
2 coils For 75p

Plastic Life-Like Aquarium
Plants Add beauty to any aquarium.
All at one price 22p each. In many
varieties. Any 6 £1

FISH FOODS
Tetramin Super flake food
Biorell Quality flakes
Freeze dried foods.
Just ask—we have many kinds in stock

Petcraft 4400
Aquarium Pump Britain’s
biggest seller.
Silent, robust. 12 months
guarantee. Only £1.23

Petcraft Super Aquarium
Pump British made with that
little extra for those who prefer
the best.
£3.15

Petcraft Combined Heater/Stat
Simple to fit, easy to adjust.
Neon indicator. 150w. and
only £1.48

Petcraft Heaters
100w, 125w, 150w. very robust.
Guaranteed for 12 months.
53p each

Petcraft Thermostats
300w capacity. Guaranteed for
12 months.
75p each

Petcraft Aquarium Kit
All complete. Heater, thermo-
stat, thermometer, filter, pump,
aristone, tees, clamps, clips,
food and tubing.
£3.88 complete

Extra Special Terylene Wool
for high filtration. Big value at
only 12p per bag
3 bags 30p

Pure Bone Charcoal
for filtration. Super quality for
perfect results. Only 12p a
carton.
3 cartons 30p

Filters
Petcraft. Bottom filter only 25p
Airstream Round
Bottom filter 42p
Cascade filter 59p

Algae Magnet
A new way to clean your aquarium glass.
Unbelievably easy to use. Makes
an ideal gift. £1.50

Petcraft White Spot Cure
A 24 hr. cure in a
plastic bottle. Easy to
use, does not kill
plants 25p a bottle.

John Hutchinson
(Pets) Ltd
39-41 Wicker, Sheffield 2. Yorks.
Tel.: 24513 (STD 0742)

Display Tanks
Aquarist supplies

We have 250,000 tropical
fish, goldfish for ponds
and aquariums, plants, etc.
Please send two 3p stamps
for catalogues.

Name

Address

“I saw your advertisement in PFM”
Gussie — everything that's good for your fish

Armitages have been making good things for fish for many years. The current Gussie range represents the best you will find anywhere — products formulated carefully and with expert knowledge of what keeps fish in perfect condition, and their environment clean, healthy and attractive.

And because of our scale of manufacture, Gussie products — while the best available — are very competitive in price.

Which all adds up to top value for money

Armitage Bros. Ltd.
Colwick, Nottingham
NG4 2BA

Let Gussie care for your fish

Please mention PFM when writing to advertisers
LETTERS

Continued from 554

chromides. I introduced them to my set-up and to my surprise the julii cat made straight for the female orange chromide and started acting the very same way as he had done with the tiger barb, only this time his courtship display was much more impressive—the fanning of the caudal was quite something to watch and his repeated efforts trying to impress her were really funny.

At first the orange chromide took very little notice, only trying to avoid the catfish every time she came close. But as time elapsed the courtship got even stronger. The orange chromide is showing breeding colours and seems to take more notice of the cat’s intentions to impress her. What happens next is anybody’s guess—at this moment both orange chromide and julii cat seem to huddle together and go through more courtship rituals. I would welcome anybody’s views on this and shall be very eager to hear what readers say.

Lang Ashton, Bristol

Green Spiders Underwater

By writing this letter I hope that it may be useful to other aquarists. I had an idea of acclimatising house plants in the home aquarium. As you will probably realise, I had little success with most of them until I tried the common ‘spider’ plant. I acclimatized this by gradually sinking the plant into water at approximately 75°F over a period of 3 months; then I rooted this in an aquarium for 3 months, in which it has been growing every since.

It seems to grow in a temperature range of 65–80°F with a great variation of water condition. Fishes such as angelfish, barbs and tetras seem to live quite happily with the plant. It seems the only conditions that this plant needs are plenty of room and between 8 and 10 hours of light a day. Heat etc. is not necessary, just plenty of fish!

Mandlel Est., Leicester

Cichlid Specialists

A growing number of people are taking a serious interest in the cichlid family of fishes and the British Cichlid Association has been formed to enable all these people to get into touch with those of the same inclination.

It is the intention of the BCA to promote interest in these fishes, gathering and disseminating information about them. With the recent opening up of the Rift Valley Lakes to the aquarist the current cichlid scene is quite exciting but often mystifying to the uninitiated. By means of a species maintenance programme a number of cichlids will be carefully observed by members and their observations collated to provide valuable reference data. Other aspects of the Association are proposed to include a panel of speakers, a library of visual aids to assist members in preparation of lectures etc., a regular magazine (the Cichlid Clarion) covering all aspects of cichlid keeping and various regional activities.

Anyone from beginner to expert will be welcomed and should get value for his £1.50. Application forms are available from me at the address below. Stamped addressed envelope please—my postal bill is enormous.

Nicosia, Cyprus Road,
Burgess Hill, Sussex

Jim Bentle
Secretary, BCA

Dangerous Dependency

I must disagree with the comments made by Mr M. Furniss in his letter on the subject of the use of air pumps in tanks (PFM, March). If a beginner wishes to use an air pump then I would say ‘go ahead’, but I have never used an air pump in my community tank and I have had no problems with fish or plant growth. In fact, I think Mr Furniss’s remark that ‘... to avoid the common, and perhaps expensive, mistake of overcrowding a quiet pump is a sound investment’ is positively dangerous. A pump should never be used to allow more fish to be kept in a tank than the tank space allows without a pump. I should have thought the recent power cuts would have underlined this—more fish are lost through the pumps being out of action than are lost through heaters being out of action in a power cut.

Folkestone, Kent

D. Broome

Brackish Mollies

The statement by Mr M. Furniss in his letter (PFM, February) on the article by Mr F. W. Coles that ‘it is doubtful whether this (Pocelia sphenops) is a brackish water fish’ is, I think, misleading. According to Kurt Jacobs in his book Breeding Aquarium Fishes, Pocelia sphenops comes from ‘rivers, streams, lakes. Especially in estuarine brackish water’. The Pocelia velifera is listed as having a habitat ‘in fresh and brackish waters, in lagoons, estuaries and streams near the coast’. So that Mr Coles’ statement that ‘In Nature mollies are found in both brackish and completely fresh water’ would appear to be quite correct whether he is talking about P. sphenops or P. velifera.

Stratford, E. 15

S. Marley
Come Muck-Spreading Time

It is a pity that Mr M. Furniss in his letter (PM, March) seeking to criticise an article should perpetuate a common myth in stating that ‘mullm should be available for the plants to convert to food’. Since the mulm is a particular and insoluble material it certainly cannot be utilised by the higher plants. Some of it may be useful as soluble products formed after bacterial action on the mulm, but any such consideration overlooks the fact that the value as foods to aquatic plants of the dissolved waste products in fish urine (invisible plant fertilisers in the aquarium) far outweighs any contribution to feeding that the faecal droppings of fish, accumulating as visible mullm, can make. Stable or hyre manure is good fertiliser for land plants because it is rich in animal urine; the insoluble matter in dung also happens to be valuable for land use, however, because of its water-holding property and ability to improve the physical state of soil. These aspects obviously do not apply to the bottom medium of an aquarium, which requires neither manuring nor moistening as submerged water plants do not go short of water and do not depend solely on their roots for feeding. No, Mr Furniss, there really is no need for muck-spreading in fish tanks.

Wishing, Surrey

P. TURNER

Meetings and Changes of Officers

BISHOPS CLEEVE A.S. New venue: The Labour Club, Royal Well Box Station, Royal Crescent, Cheltenham, First Wednesday of month, 7.30 p.m.

BRIGHTON & SOUTHERN A.S. Chairman, Mr R. Wilson; Treasurer, Mr A. Nutter, secretary, Mr C. F. Corbin (58 Market Drive, Bulverhythe, St Leonards-on-Sea, Sussex); treasurer, Mr G. W. Dean. Meetings: general meetings to be held on 1st Tuesday in month (9.30 p.m., K & T Club, Franklin Road, Portslade, Seebex.

BRITISH COILIDAL ASSOCIATION. Secretary, Mr J. W. M. Barnes (Nestle Cyprus Road, Bognor Regis, West Sussex).

CHESTERFIELD A.S. Change of secretary to Mr R. F.et., 12 Boyne Bank Road, Chesterfield.

CYMRU NATIONAL A.S., Chairman, Mr R. W. Evans (Ystradfaes, Llan盂n, Mid-Wales); secretary, Mr G. Thomas (Cefncoed); treasurer, Mr R. Richards (1 Church Street, Llanynghien, Rhos, Glan), committee, Mr C. Harries (Cefncoed), Mr R. Williams (Newport), Mr P. Jenkins (Penrhiw), Mr J. M. Allen (Penrhiw). Changes of venue, Mr B. Russell (Cefncoed).

DIDCOT & D.A. Meetings: first and third of month, 8 p.m., Eeestruction, Didcot. (See notice May 1971)

DORCHESTER & D.A. Meetings: second Thursday of month, 7.30 p.m. Dorchester Junior School, Duntons Road, Dorchester, Dorset.


HALF MOON A.S. New society. Secretary, Mr R. E. G. (Bob) Riddett, 17 Huntingdon Road, Bellingham, Tyneside.

HAMPISTED & D.A. Chairman, Mr R. Parry, vice-chairman, Mrs K. Hunter; secretary, Mrs V. Greenham (193 Woodroad, London, N.W. 12); treasurer, Mr D. Moore; show secretary, Mr E. H. Harvey; committee, Mr J. Patmore; PRS member, Mr E. H. Harvey. Meetings: Binton Hall, Abraham Road, Stoneleigh, Coventry, N.W. 6.

HARLOW A.S., Chairman, Mr B. Sales, vice-chairman, Mr J. Darby; secretary, Mrs E. D. Tinker (24 Gableswood, Harlow, Essex); treasurer, Mr L. Harvey; show secretary, Mr P. Monck-Brown, P.R.M., Mr P. Allen. Meetings: Fortnightly, 8.30 p.m., Peters Street Community Association, Harlow.

HUCKMALL & BULWELL A.S., President, Mr E. Smith; chairman, Mr R. Widdowson; secretary, Mrs B. Richardson; 39 Newby Road, Worsley, Manchester, N.W. 3; assistant, Mrs J. Wright; treasurer, Mr R. Widdowson; show secretary, Mr G. Swain (24 Westagold Road, Steeton, Bradford), treasurer, Mr R. Duffield; show secretary, Mr W. Pickford; librarian, Mr J. Back.

LOUGHBOROUGH & D.A. New secretary, Mr D. King (8 Charlesworth Avenue, Loughborough, Leics.; phone 0569). Donations to Esso Motor Oil, Loughborough.

MERSIENSY A.S., President, Mr B. R. Page, vice-president, Mr D. M. Burley; secretary, Mr F. Muller, vice-chairman, Mr K. Newman; treasurer, Mr E. Day; secretary, Mrs J. Parson-Jones; treasurer, Mr K. Parson; show secretary, Mr W. Stibbs; librarian, Mr J. Tomlinson; editor, Mrs V. Paragon. Meetings: Tuesday, Murell Street, Manor, Ashton-under-Lyne, and Social Club, 3 Richmond Terrace, off Bank Road, Liverpool 6.

MID-HERTS A.S. President, Mr T. King; chairman, Mr C. A. Wilson; secretary, Mr D. V. Laker (4 Old Park Road, Hindon, Herts.); treasurer, Mr P. F. Miles.

NEWS reaches us of the AQUARIUM OF TERRARIUM SOCIETY OF QUEENSLAND, Australia, Mr Ken McCall writes: ‘Our Society is still going strong. We have a total membership of around 100 and a separate marine group that has 25 regulars. We still meet on the second and fourth Sundays with the marine group meeting on the third Tuesday of the month. The Society took part in the hobby display last November called Hobby Tempo ’71. This was a display by many clubs including model trains, aircraft, painting, pottery, engineering etc. There is a prize voted by the public for the best display and our Society won it for the second year in succession. Over 10,000 paid to enter the exhibition, all monies going to charity. Visitors are always welcome at our club and this applies especially to people who have migrated out from England. They can contact our president, Mr Bob Hawley, at 68 Stagfold Street, East Brabourne, E.4, for full particulars.’

PORTSMOUTH A.S. Chairman, Mr J. Lambell; secretary, Mrs T. Harvey (140 Ledge Road, Solent, Newport, Isle of Wight), treasurer, Mr A. F. Foreman, P.R.O.; Mr K. Widdowson; show secretary, Mr K. Widdowson; librarian, Mr J. Back; treasurer, Mrs E. S. Poynter (49 Park Hill, Portsmouth, Hants; PO3 4YJ). Meetings: first and third Wednesday of month, 8 p.m., Portsmouth, Community Centre, Twyford Avenue, Southsea.

SOUTH PARK AQUATIC (STUDY) SOCIETY. Chairman, Mr R. E. Butler; secretary, Mrs M. Duffield (157 South Park Road, Winchcombe, Gloucestershire, GLO 14Q). Meetings: second Sunday of month, 8 p.m., Compson Hall, Compston Road, Winchcombe, Gloucestershire.

SOUTH SHIELDS A.S. New Society. Chairman, Mr R. L. Southall; secretary, Mr Robert Clark-Clarke (172 South Eldon Street, South Shields, Tyne and Wear). Meetings: fortnightly, the Neptune Hotel, South Shields.

SOUTHAMPTON & D.A. President, Mr J. Field; chairman, Mr D. Jones; vice-chairman, Mr T. Wren; secretary, Mr N. J. Greville (28 Manor Farm Road, Ruttens Farm, Eastleigh, Hants). Meetings: first and fourth Wednesdays of month, 8.30 p.m., Compton Hall, Compton Road, Basingstoke, Hants.

STEVENAGE A.S. Secretary, Mrs G. Marsham (23 Methley Way, Stevenage, Herts). Meetings: first Wednesday of month, 8.30 p.m., Redhill Community Centre, Stevenage, Herts. New members welcome.

SUPTFORD A. & P.A. New venue: second Monday of month at the YMCA Hall, St Albans, Herts. (See notice April 1971)

TOTTENHAM & D.A. Secretary, Mr T. Small (27 Talbot Road, Tottenham, London, N.17); telephone: 01-884-1150; show secretary, Mr K. Massey (51 Waterford Road, South Chingford, London, E.4: 01-837-1973)

UNITED A.S. New Society. Meetings: every other Thursday, 8 p.m., Lytton, Londo: E.8, 6 p.m. For details contact Mr S. G. Corlett (14 Dunton Road, Lytton). (See notice April 1971)

WELBECK A.S. New Society: Secretary, Mr J. E. Ashcroft (22 Lower Oxford Street, Canterbury, Kent, CT1 2AE). Meetings: third Wednesday of month, Rural Britain Legion Club, Welbeck Street, Cumberland, 7.30 p.m. (See notice April 1971)
For the rivulid fancier

An Annual Fish from Peru

*Pterolebias peruvensis* Myers

By RUDOLPH ZUKAL

Photographs by the author

A MONG the various types of rivulids that are found in the eastern part of the Loreto province of Peru can be found this egg-laying toothcarp. It has been known to the aquatic world since 1954 and is a slim, elegant, fish that reaches a size of 3-3½ in. The brown *Pterolebias peruvensis* or ‘little veiled carp’ as it is known to German aquarists has reddish and greenish hues. The male’s body shows dark bars particularly towards its rear and its anal fin. The male’s dorsal, anal and caudal fins are also striped. The female has a rounder body and is also beautifully, but not so intensively, coloured; her small caudal fin is dark-bordered.

The fish should be kept at a temperature not lower than 75°F (24°C). They may be mixed with other peaceloving toothcarps but it is better to keep them only with their own kind. They are at their best when kept in a medium-sized tank filled with ordinary tap water and prepared with a soft bottom medium. Although some authorities suggest that a temperature below 68°F (20°C) does not harm them I would warn against keeping these fish ‘cold’. Water that is too soft is also unsuitable for them. So, in order that all their requirements can be provided for, it is a good idea to set out half the tank with a sandy base and plant it normally and to prepare the other half of the tank with a layer of peat. The sand and peat can be separated by a narrow glass strip. A few floating plants and daylight or light from above suit this fish very well.
Propaganda is fairly simple as the fish spawn frequently and willingly. Their spawning behaviour closely resembles that of the Cymolobus species. The eggs are laid in the soft base where, in Nature, they will survive the dry season, as the tough egg-shells prevent the embryos from drying out. Nature has so fashioned these fish that they are sexually mature at 3 months and their life span rarely exceeds 10 months.

The dry season in their natural habitat lasts a fairly long time, so it is necessary to keep the post containing the eggs for a period of 3 months; it should be kept damp in something like a plastic box at a temperature of 72-75°F (22-24°C). After this time, if the eggs are sprinkled with water from the aquarium the fry hatch within a few hours. The eggs can withstand even longer ‘dry seasons’ than the suggested 3 months and can be hatched out after this time, but they will not hatch if the preservation time is shortened.

Accompanied by the male (lower fish) the female appears to be searching for a suitable site for the spawning. This search began after a period of courtship display by the male.
Within a compact mass of plant on the tank bottom the male and female press their sides together and the eggs are expelled. The female's body is curved in an arc.

When these rivulids spawn, whether it be in peat or sand, the adults disappear into the substrate so, as I wished to photograph them, I put them into a tank containing Java moss. First of all the male displayed before the female, swimming with jerky movements and alternately spreading and closing his fins. Courting behaviour started when he swam underneath her and tried to reach her side. Then he would try to entice her to a spawning place. In the end the female herself started to search for a spawning place and the male immediately reacted to this. He turned to the female and the spawning began. Together the fish disappeared into the bottom of the tank; there they pressed together and the eggs were expelled. The male then left the spawning place but as soon as he started to display again the female pursued him.

Once the eggs are hatched, the fry must be supplied with live food of a suitable size as, like the adult fish, they are interested only in live food.
CLIFF HARRISON discusses

the modern technique for making

All-Glass Aquaria

THE popularity of all-glass aquaria has been established for almost as long as fishkeeping itself, for there is much truth in the view that the beauty of fishes is seeing them encased in a transparent 'cube' of water. However, although sturdy angle-iron frames certainly detracted from the aesthetic appeal, the early all-glass aquaria, cast in one piece like a rectangular goldfish bowl, had perhaps even more disadvantages.

Distortions in the glass gave a very poor view of the inhabitants. Many were of the wrong proportions (very tall for their base area—the worst were those containers salvaged from use as old-fashioned accumulators). A small chip or crack in such moulded all-glass tanks could unexpectedly spread and cause the tank's contents to be deposited over the floor.

In the late 1960s some hobbyists experimented with epoxy-resin adhesives—generally accepted as the strongest in the world—to glue sheets of glass together to form aquaria. Unfortunately this was not found to be particularly successful, since minute contractions and expansions of the aquarium glass, caused by temperature changes, eventually led to a breakdown in the bond between the glass and this particularly brittle adhesive.

Other tests also indicated that epoxy-resin might not be completely inert in some types of water.

It was about this time that the first supplies of silicone rubber sealant, used in various forms in the building industry since the 1950s, were made available to hobbyists in this country by Dow Corning of the United States. Initially there was some confusion with a similar product they market as a 'bathtub caulk', but which contained a strong fungicide found to be very toxic to fish life. Subsequently a similar safe sealant for aquatic use, produced by I.C.I. Ltd., was marketed by a number of British companies.

For those unfamiliar with silicone rubber sealant, the initial appearance of the product along with the name sealant, is quite misleading; after the curing time of some 48 hours, it is a soft, flexible substance which retains these qualities indefinitely even in a temperature range of \(-50^\circ\text{C}\) to \(+200^\circ\text{C}\) (twice the boiling point of water). It can be easily cut with a razor blade or sharp knife, and yet, when used correctly to construct an aquarium, it will withstand almost any amount of strain or pressure, and even the strongest of glass will split before the joint gives.

The strength of silicone rubber comes from the way in which it bonds chemically with the silica in glass (and a number of other substances). To ensure a good bond, the areas to be joined must be cleaned with a solvent that leaves no residue (Thinwit or pure turpentine are ideal) and then dried thoroughly with a soft paper tissue.

In addition to completely frameless aquaria, availability of the sealant has also led to the professional fabrication of tanks in which the frame is primarily ornamental and imparts little strength or rigidity to the unit; typical examples on the market utilise the attractive qualities of anodised aluminium or coloured plastic to encase a watertight glass box.

Quite apart from the obvious appeal, in many cases, of a frameless aquarium there are a number of further advantages which account for the present level of interest in silicone rubber. Aquaria of almost any size and shape may be constructed without the long wait and high cost incurred in the past with angle-iron frames ordered to special design. Such all-glass tanks are often less expensive than a comparable framed tank, and do not rust or deteriorate in appearance over the years.

Just a note or two of caution, though: the silicone rubber does discolour if certain substances, such as Methylene Blue, are present in the water; although this does not fade for several months no harm is done to the strength of the bond. And if you are using a scraper incorporating a razor blade to clean the inside glass, make sure it does not come into contact with the sealant: the best idea is to use a new, non-metallic scouring pad for this job (one that is not tainted with soap, detergent or any other household chemical, of course).

Next month: Practical instructions for making all-glass tanks.
Collecting in the CAMEROON

By
Dr ALFRED C. RADDAA
and
GEORGE CATTANACH

One of the authors (G.C., left) is seen with another member of the party examining a stream south of Kribi

At last our Douglas DC3 of Air Afrique roared to a standstill in the Douala night, cabin doors opened and the hot wet tropical air of Cameroon enveloped us. Certainly some of the passengers from the damp-freeze European winter would find difficulty in adjusting themselves to this 'greenhouse type' climate. Two hours later found us in a rather dilapidated looking Douglas DC3 flying over the equatorial evergreen rain forests. Occasionally white tufts of cloud below us broke this green velvet carpet adorned with uncountable silver rivers and streams some 5000 feet below. In a hole in this green carpet, which was a jungle clearing and no more, we landed at Kribi.

Our first collecting trip was to two small streams from the River Kienké drainage; this proved successful and very interesting. The streams and area of the flat coastal area of the East Cameroon are all of the soft water type. We measured total hardness around 5°DH and electric conductivity from 15 to 20 micro-mhos/cm, water temperature being around 25° C. The small buffering capacity of these waters the pH value is always in the acid zone, with readings between 5.2 and 5.9. Humus and tannin from the decaying vegetation gives these clear streams a colouring from light yellow to peary brown. One becomes a little excited and one's pulse beats faster at the sight of the fish life here. After the first blood draws with our hand-nets under the heavy vegetation hanging into the stream and through the thick blanket of leaves on the stream bed, our first orange-yellow finned Aphrodisia toejacutu and Aphrodisia brevicaudata wriggled before our eyes.

The males of Aphrodisia toejacutu, showing a beautiful wine-red and yellow markings in the vertical fins, a few Polymixius h Kont and Polymixius brevicaudatus also landed in our nets, together with Neolebias anasagei, some Claridae and Chiroptera species. Later we also managed to catch some Psenatupes sores, the greenish blue sides of the body contrasting vividly with the orange-red back and fins of these shortfinned fish.

The next day we visited some of the streams south of Kribi, some running into the River Loblé and others direct into the sea. Here the toejacutu and brevicaudata differed slightly from those in the Kienké area, being generally paler and running into more green-yellowish tones. In a swamp area we were fortunate in catching a number of Aplocheilus grahami, this rather smaller Aplocheilus is immediately recognisable by the luminous green-blue iris of the eye. Large shoals of Nannopis sp. were also caught in the quieter area of one of the streams. Water readings taken in these streams were very similar to those of the previous day.

We took the opportunity of a free lift to Bispindi (about 45 miles inland in a north-easterly direction) and tried our luck there. Here near the edge of the higher lying inland plateau—where an entirely different hillfish fauna from that in the coastal area lives—we found almost the same conditions as on the coast; the fish here were practically identical with what we had until now caught in the Kribi area. After a week we had investigated nearly every large...
Six Characters in Search of a Caption

Six characters who offer you a chance to win a book. To the reader of PFP who in the opinion of the Editor supplies the best title or caption to the picture a copy of THE PICTORIAL ENCYCLOPEDIA OF FISHES by S. Frank will be sent. Closing date 31st May 1972 and no correspondence will be entered into concerning entries sent in.

(Photograph taken at SCAN Fish houses by Cliff Harrison)
Of all the attributes of a well set-up aquarium, I suppose that the quality of water is one of the most important factors. I am not referring here to the pH or the DH but to the mere appearance of it. Some aquarists manage to achieve a mixture which could in other circumstances be mistaken for vegetable soup, whilst others have the facility of maintaining a gin-like liquid that never seems to change from summer to winter, and all without aeration or filtration. I have always aimed at the latte state of affairs, if only for the reason that I like to see my fishes sometimes, but I agree that intriguing effects can be obtained by just letting the algae grow and cutting little windows in it when you wish to become acquainted with the tank’s contents. The sudden appearance of an adult firemouth’s head at such peepholes can, however, be quite alarming, and the practice is not therefore recommended to the sensitive.

There are times during the year when I am compelled to depart from such standards of visual purity, and this happens when there are dry spells in this part of the country. Since I top up my tanks from a rainwater tank, which derives its input from the roof down-pipe, I am often forced to use progressively greener water than I would have wished until the weather breaks again. It is at times like this that I hope that any visitors will confine their attentions to the garden, the weather or almost anything but aquarium. Fishkeepers are most unlikely to believe my story that this only happens about three times a year and non-fishkeepers try hard not to look at what they sincerely believe to be containers of stagnant and highly dangerous water.

Two factors incline me toward continuing with the habit. The first is that my wife thinks it is a nice change from the crystalline normality, and secondly there is a firmly held view in some quarters that a really great water bath does a power of good to a fish. I think there may be something in this latter view because my fishes often look distinctly well-to-do at such times: certainly they have never resented the treatment. The free-swimming algae may perhaps remind them of their infancy and give them the same satisfaction that we adults derive every so often from a surreptitious nibble at Dolly Mixture. The introduction of freshly fallen rain, particularly after a thunder-storm, seems also to give great satisfaction, and I usually make a point of servicing my aquarium shortly after these heavier downpours.

Fishkeepers often bemoan their inability to get rainwater for their charges, and ask where they are to store it even if they can collect it. The favourite trick seems to be to lay plastic sheeting in convenient shallows in the garden or in between a few spare bricks on a balcony or in a back yard. Those very civilised plastic dustbins (praise be, they are noiseless, too!) can be turned into excellent reservoirs and, since they have a lid, encourage algal build-up rather less than my open-topped storage tank. All the same, leave off the lid sometimes and let the water green up a bit. You can be fairly certain that your fishes will appreciate it, and it might also appeal to your wife. If you can, incidentally, think up any convincing stories to account for the state of your tanks to those visitors, I should be greatly interested to hear them.

In my early days of fishkeeping there were stern warnings about the consequences of allowing a dead fish to remain and decay in a tropical aquarium. Certainly I shall never forget the day when a tremendous swordtail passed away behind a large rock and generated thereby one of the most nervous situations imaginable. It nearly brought the end of my fishkeeping since my parents were then in a position to say what went. For some strange reason the like has not recurred until I lost two large angels a few months ago. Such a disaster must be expected to require immediate removal of the bodies and a careful look around the remaining occupants in case there is any evidence of disease that calls for treatment. In the case of old fish dying off there is usually nothing to be done apart from removal of the corpses; certainly they must on no account be left around as food for the survivors.

Often, though, when small fish die there is no evidence by the following morning to mark their passing, and one should not worry unduly if a neon, for example, dies and the corpse cannot be traced. Unless the tank is very small it is likely that the small amount of decomposition involved will not result in a major upset. If you keep a few of the smaller kuhli loaches you will find them first on the scene of any mortality and they could for this reason be regarded as a very cheap and sound investment, as they usually clear away most of the evidence of death. Other carnivorous species will do the same, but for me the kuhlis make the best morticians because they move
unobtrusively, silently and in a dignified fashion. Although we can dismiss some of the alarmism of yesteryear it is still wise to be on the lookout for impending fatalities. With new stock—and this should always be quarantined in special quarters—there should be no real problems since the tanks will usually be understocked anyway, in which case there will be a larger than usual pollution margin. (I am writing here for the amateur, not the trade, whose quarantine tanks will usually be full to overflowing—or non-existent.)

In established tanks one can often anticipate trouble by noting any notable change in habit of a particular fish. Most fishes have favourite 'patches' and are more often seen there than elsewhere, but if one suddenly takes up different night quarters, especially if low down in the tank, there may soon be food for the loaches. Another sinister sign is when a fish takes up position in the aerator stream and cannot maintain control of its movements whilst in the vicinity. Some fish like danios will constantly bob in and out of the air bubbles, living every moment of it, but it is when a fish unusually participates in this diversion that trouble may be expected.

These, then, apart from a general quietening down in demeanour, are the main signs of impending death in many of our aquarium fishes, and they quietly and we hope painlessly pass on. Where more alarming symptoms develop in old fish it is certainly kinder to destroy them than to leave them in undignified distress. In particular I think the worst way out must be the condition in which a specimen loses equiliibrium and swims upside down or in circles. Old fish cannot take medication as many young ones can and it is pointless to try to bring about their recovery by the application of drugs. Better, then, to bring about quick drainage and to pay an immediate visit to your dealer in some way to heal the wound.

GUPPY World

It should have been as obvious as rising damp to a building society surveyor but endorsed by generations of experts who advised 'never overfeed' it became overlooked by many guppy breeders. What did? The simple fact that being the larger of the two, the female requires about four times as much food as the male, and that also applies to tank space. That the female of the species is truly emancipated is evident by a comparison of quotes from 'Guppy Roundtable'. In August 1963 we were told that if our tanks contained any female guppies 3 in. or more in length they should be saved for the next show.

Move on 2 years’ time, the present and the same source is now advising that 4-in. fish are the in-thing, quoting cases of where smaller females are being beaten on the bench.

One inch in a year doesn’t seem much progress. Only those who have tried will understand just what an achievement it really is.

... Feed your guppies on algae and watch them grow! Not some advertising blurb but the advice given me at a show when I enquired from one exhibitor about the diet, he used to produce such magnificent fish.

By PETER UNWIN

Browsing through a second-hand book shop later, I came across the following story in a little booklet thrown into one of those pick-where-you-like for 5p trays. It reminded me of the recommended guppy diet—algae.

Back in the '30's a certain Jorgen Jorgensen heard that Scandinavia required vitamin A to add to their margarine, the latter to replace the butter imported from Denmark. On his travels in South America, Jorgen had learned that in some areas around Lake Maracaibo there occurred patches of Agua espinia, a form of algae that was rich in carotene, a yellow pigment that produces vitamin A in carrots. He cultured this plant in large, unglazed clay bowls and, when exposed to sunlight, this algae thickened. It grew twice as fast if he introduced stale soda water.

So, if you have trouble in growing that green stuff all you need is some water charged with carbon dioxide. On reflection, are there really any fishkeepers that do have trouble in growing algae?

Can fishes generally and guppy in particular see in colour? That some fish can has been proved but whether all can enjoy full colour vision is not yet clear.

The extreme convex shape of the lens in the eye of the guppy suggests that they are near-sighted, thus limiting their range and acuity even in the clearest water. Writing on the subject, well-known guppy specialist, Midge Hill, says that if a spectrum of colours is projected into the aquarium the guppies tend to gather under the green and yellow bands of light, apparently thoroughly enjoy-
The Family ARIIDAE

Sea Catfishes

Although by no stretch of the imagination could the sea catfishes of the family Ariidae be considered common or usual aquarium occupants, they are sometimes kept by amateur aquarists as well as public aquaria. For this reason, any consideration of catfishes for aquaria cannot omit them. The distribution of the ariids is worldwide except for those areas of extreme cold, and they are of unusual interest from a number of standpoints aside from aquarium candidacy.

When the aquarist thinks of mouthbreeding (or more correctly, mouthbrooding) fishes, he usually thinks in terms of the family Cichlidae. Cichlids, generally, are remarkable for the amount of parental attention and ‘concern’ that is shown toward their offspring, and the process of oral incubation certainly is among the most interesting expressions of their reproductive functions.

Among catfishes, it might come as a surprise to some aquarists to find not one, but over 40 separate species of mouthbrooding fishes belonging to this single family. In every recorded case it is the male parent who performs this task—so admirably that many human mothers might do well to take notice.

Perhaps the most amazing part of the entire procedure is the tremendous size of the eggs. Although the number of eggs may be no more than 20 or so, depending on the size and species of the parent, when one considers that the eggs are sometimes as much as one-half inch to seven-eighths inch in diameter, again depending on species, admittedly this is a mouthful in any language. Parental protection in a typical ariid catfish lasts from spawning through the 4 weeks until hatching, plus another 2 weeks while the young are actively feeding and returning to the safety of their father’s yawning mouth. During this 6 weeks’ period the male fasts. For those of us accustomed to the usual gluttony of such wide-mouthed catfishes, such restraint is rather awe-inspiring.

In spite of their primarily marine nature, ariids often ascend into fresh waters or estuaries and a few species spend their lives in fresh water. Some islands such as Madagascar would be devoid of catfishes except for ariids and plecosts (family Plotosidae) which enter the streams.

Arid catfishes, if they are attempted to be kept at all by the aquarist, are best limited to smaller specimens. Because of the almost universal distribution of the family, one or two species are usually caught by seining the shallows of bays and beaches. They can be kept with other marine species and can be acclimatized to less salty, even fresh, water. Most will subsist on the type of food ordinarily used for big-mouthed catfishes, such as lean beef or thoroughly rinsed fresh fish. The wide range of ariid appetites is perhaps indicated by their reputation among cattlemen in various parts of the world, who consider them susceptible to almost any bait.

Most members of the family Ariidae have the ‘typical catfish look’, which has been mentioned before. In addition to their rather ordinary external appearance, some, such as Sciaenochromis proops, possess one of the most curious anatomical features that could bore the imagination, for this is the famous ‘crucifix fish’ of South America.

When viewed from beneath, the dried and cleaned skull of the crucifix fish shows clearly the
impression of a cross. Superimposed on the cross is the figure of a man with arms outstretched, and in some species there even appears a halo around his head. Several small bones often become loosened and remain inside the skull after drying, and when the skull is shaken they rattle. Legend says that the sound produced is that of the dice which were cast for Christ’s clothing. Every bone that can be disassembled from the skull is said to represent an artifact of importance in His passion. The other or upper surface of the skull has been said to represent the breastplate of a Roman soldier, or even a robed and hooded monk with outstretched arms. Certainly this is an imaginative bit of fish lore, but it is among the most interesting of the countless legends concerning fishes.

**Have You Seen the Tanganyika Cichlids?**

Two of the cichlids from Lake Tanganyika are pictured on this page. On the left is the paddle cichlid (*Lamprologus estuarensis*). Its fully grown size is not known, but the specimen shown is 4-5 in. Colour overall is a deep green with golden flecks; the gill cover carries a black spot. The very long pectoral fins (‘paddles’) form the distinctive feature of this species, which is a fairly peaceful cichlid. Rocks rather than plants should form the tank furnishing for Tanganyika cichlids—their native lake has little vegetation and the presence of plants appears to distress the fishes. Below is the lyre-tail cichlid (*Lamprologus seymouri niger*), probably fully grown at the size (3 in.) shown. Less spiteful than many of these cichlids, this one is pink-blue overall with a lovely bright orange ocellus on the gill covers. The beautiful lyretail of this species is not evident in these newly imported specimens.

Fish photographed by

**CLIFF HARRISON**

at

SCAN, Colnbrook

Notes supplied by

**DEREK COLE**
TROPICAL MARINE PROJECT – 3

Tackling a Larger Tank

By ROY PINKS

ANY marinist will tell you, I suppose, that a mere 15 gallons tank simply isn’t good enough. To the beginner who has come through the sometimes nightmarish but nevertheless intensely interesting prologue to tropical marine fishkeeping, anything more elaborate could appear either as a quite impossible venture or simply the next challenge. At the stage when my small enterprise had reached apparently manageable proportions I took a look at it and concluded that when readers had heard all about my damself and clowns—all very commonplace, these days—there would come a nasty silence for the very simple reason that I had no room for anything more unusual. This would never do. Furthermore my family began to take a hand in matters marine as they never had in matters freshwater, and I gradually realised that something more ambitious was expected of me. The appearance of a Heniochus aruaninus at the dealer’s finally did it and I ordered a larger tank on the spot. At the current rate of progress I reckoned that the combination of my normal inertia, financial decrepitude and autumn despondency might enable the first fish to be introduced at about Christmas time.

Having made this decision I set out to test a number of the facts which had emerged from my first experiment, and in particular I was interested in the possibility of the larger tank maturing at about the same 6-8 weeks stage as the smaller one. I also wanted to try out one or two of the less tolerant beginner’s fishes during the running-in period to try and establish the extent to which liberties could be taken. Clowns seemed to be reasonable candidates for this; clearly, such as butterflies or angels would be too expensive to risk and it would have been unreasonable in any case to subject them to conditions known to be so offensive to them. Another of my objectives was to make as decorative a feature of the tank as possible, as it would obviously be a main feature of the room. Certain of my tank furnishings would also come under scrutiny in order that maintenance could be cut to a minimum.

The size of the new tank was to be 36 in. by 25 in. by 18 in. high. Since marine are not as subject to the surface area of water formula as are freshwater fishes, a greater impact visually can be obtained quite economically by enhanced tank heights and I could have gone to 24 in. high quite happily. This time it was a nylon-coated tank for me, though the firm Lee Reed fell from grace by fitting it with a frosted-type glass back panel. A deplorable habit at which I should have protested at the time, but such is the impatience of the aquarist that they got away with it. It otherwise came up to their high standards. I sealed the inside seams with a silicone rubber sealant as an aid to the preservation of the cement.

One of my problems with the first tank was salt deposits on the cover glass and on the outside of the tank. The high throughput of air causes so much turbulence of the water that considerable areas of the water surface are constantly covered by a myriad of bursting bubbles. The water droplets penetrate the minute spaces between the tank top and the cover glass and layers of salt deposit of varying thickness build up all over the place. I discovered that Perspex seems to repel water more thoroughly than glass, and after I had tried out a Perspex covering the rate of salt deposit visibly dropped. It is not an ideal substance, however, for it tends to bend and warp from the heat and weight of the overhead lighting, but as it can be drilled more simply than glass to enable airlines to be led to and from the tank, and as it also can be cut quite easily to accommodate feeding flaps it is worth considering. Its price is alarming, but so, too, is glass these days.

Because of the above reservations I finished up with a tank cover constructed partly of Perspex and partly of the corrugated plastic sheeting from which the undergravel filter had been made. This cover, quite a heavy affair, was tailored almost exactly to the top of the tank in such a way that a right-angled black plastic lip fitted into the opening at the tank top and helped to lead back into the water some of the surplus that had been sprayed to the undersurface of the cover by the turbulence of the filter outlets. A row of holes at the rear of the cover took the airlines, and a larger hole accommodated the heater/thermostat. I cut a hole, some 6 in. by 4 in., in the corrugated part of the cover. Another piece of corrugated sheeting an inch or so larger all round can be slid backwards or forwards over it or lifted off altogether for
purposes of feeding or introducing new stock. At a later stage I made a much larger removable panel in this area, which in itself incorporated one of these small access points. This enables a limited amount of internal servicing without removing the main cover. At the same time, to enable the latter to be lifted off at short notice the airline were fitted with regulator taps just an inch or so away from their point of entry and this makes it possible for them to be unshipped simply by pulling the taps out of the ends of the lengths of piping leading into the tank.

In use this cover has been a great success. For some reason salt deposits seem not to build up on the corrugated sheeting even though a certain amount of water gets thrown on to its surface. This cover supports the rather heavy Grohax lighting unit I constructed, and as it is made from both Perspex and corrugated sheeting no sign of warping has become evident so far.

Because of that wretched obscured back panel in the tank I had to consider more carefully than usual what to use as background. My favourite—the piece of blue plastic sheeting rubbed with wet soap and pressed hard to the outside of the glass, to which it will adhere so much—was not practicable. I was thus driven to making a false back to which could be affixed bits of sea fan or what you will. This was not a difficult undertaking but it had to be a lightweight job as changes of mind about decor have to be implemented swiftly if they are ever to see light of day. This affair, some 2 in. in depth, had screw eyes inserted in the top framework. Plastic rose ties were used to secure these to the air inlet tubing taps on the tank cover and they take no time at all to remove.

The rose ties, incidentally, are the type with serrated ends which fit into slots at the distant end of each tie; they are also useful for tidying up loose and sagging runs of wiring and may be used to fit snugly to aquarium stand legs or fish house staging.

The lighting was to be from one or two 20 watt Grohax tubes and I made a casing with two switches which would enable them to be used together or singly. As an economy measure I fitted only one tube to start with, and so adequate is this single unit that I think it will stay that way. There is, of course, great debate on the matter of lighting for marine aquaria because of the effect it has on the build-up of algae, and I will leave comment on this point until later. It will suffice to say that some aquarists prefer to see lots of algae about and others cannot stand it. Since your point of view probably derives from whether you have got it or not, plain logic may not always carry the day. Later in this series the possibilities will be considered in greater detail.

I then went buying coral. Coral is something that absolutely fascinates me, and I could spend a fortune on it. Come to think of it, I probably have already. The sitting room gradually got cluttered with lumps of every shape and size, accompanied by sea fans and sea trees of varying magnitude and density. Even the children began to enquire whether there would be any room for the fishes, to which my wife sadly observed that even if there we could hardly have any money left for the purchase. I was nevertheless indulging a whim I had that this large tank would not be one great open swimming space but a highly compartmented area—cluttered, if you like—in which natural barriers would enable the skyer fishes to find privacy from the boisterousness of the reputed bullies. My original tank had incorporated this principle and the absence of torn fins rather vindicated my attitude.

With just these few improvements I made ready for my most ambitious project yet, and there followed days and days of all those fascinating and tedious operations that precede setting-up day:

Wiring, painting woodwork, giving the wrought-iron stand a double coat of clear polyurethane paint as an antiferric agent, boiling and washing gravel, boiling, bleaching and soaking coral. Perhaps the most tedious operation is scaling the sea fan and trying somehow to boil it without reducing its stiffness to a state of unacceptable bedragglement. The house reeked of that faint, meaty smell of boiling coral, and my wife's preserving pan was in such constant use that the other top priority of this time of the year—bottling of the black purchase. I was nevertheless indulging a whim I had that this large tank would not be one great open swimming space but a highly compartmented area—cluttered, if you like—in which natural barriers would enable the skyer fishes to find privacy from the boisterousness of the reputed bullies. My original tank had incorporated this principle and the absence of torn fins rather vindicated my attitude.

At this point a rather unexpected difficulty arose. I had put my favourite Rena Super pump into reserve when I set up my first marine tank because there were limits to what one could fairly expect one pump to do. It was natural that I should have turned to this powerful and silent machine to drive the undergravel filter in the new tank, and all seemed well until on 27th August, 2 days after fully setting up, I beheld a scene of typical Arpex disaster. The tank water was very cloudy and reeking of evil mustiness. In fact the whole room was foul with the smell and we had to open the windows to disperse it. However high I turned up the pump the air volume seemed inadequate to push the water round at what seemed a desirable rate under the circumstances. It seemed that the
Guppy World

Continued from page 570

ing the limelight. Under red illumination they react as if they were in the dark and slip into that torpidity akin to human sleep.

Midge concludes that guppies have trichromatic vision in that they can distinguish a wide variety of colours regardless of their brightness. That they are not colour selective with each other is obvious to any broadcaster who has observed a blue guppy in a tank of reds. A consummate i wouldn't wish on my worst enemy!

Recent conclusions from a scientific inquiry into the feeding habits of fancy guppies were that genetics apart if you are to produce high-quality fish you must feed them on a variety of foods at least eight times a day.

Despite my italics that isn't news. We have been aware for quite some time that the guppy's digestive process is such that most of the food it consumes passes through its digestive system in about half an hour. What, to me, was very sudden- in the report was the statement that such feeding produced very few fish that lived to a decent age. Fourteen months was the figure quoted.

In our search for that prize-winning strain are we to ignore the welfare of the creatures over which we play God? It is but a decade since a well-known northern guppy breeder, Constance Kelly, won two consecutive years at the P.F.A. Annual Show with the same fish—only missing doing it for the hat-trick by a narrow margin. That particular fish, a magnificent female guppy, was nearly 4 years old when it joined its ancestors and its progeny proved to be equal to her in the longevity stakes.

One ironical fact is that, in his researches into gonotology, the science of ageing, Dr. Alex Comfort uses the guppy. He proved that one little point is capable of long life—are we to alter this by selfish feeding?

To: R.B. (Birmingham). The reference that you asked for in your letter is as follows: A. Comfort and Fanny Doljanski. "The Relation of size and age to the rate of tail regeneration in Lohes robusta."

Your city library will no doubt be able to help you to see a copy of this paper.
WATER GARDENS

By RAY DAVIES

Making the excavation: turf has been removed for 24 in. beyond the pool outline for paving stone edges to be laid level with the lawn. Stones are removed and sand laid on the base and sides.

Butylite sheet is draped into the excavation and weighted at the edges. Weights are eased as the pool is filled so that the liner fits snugly. After filling (below) surplus sheet is trimmed to leave a 3-4 in. flap.

IN recent years modern techniques and materials have brought the costs of these wonderful garden features within the reach of all. Now, with modern superior materials, a pool can easily be constructed in one day.

A pool should be sited so as to receive at least half a day's full sun, preferably full day, for the water lilies to flower profusely.

Try to avoid a site near trees that would pollute the water by falling leaves. (A pond net is otherwise essential in the autumn to catch the leaves.)

Size and shape should be in proportion to the surrounding layout. To give the best idea, lay a garden hose or rope to the shape required and view it from all angles. Adjust the outline until a suitable size and shape is achieved.

Size does play an important part in the pool balance. To achieve an attractive and clear pool a balance must be established between volume of water, surface area, plants and fishes. The minimum size we have found to maintain this balance is 40 sq. ft. surface area. Pools under this size may prove a little difficult to create this balance, and can remain cloudy and dirty looking.

A minimum of 18 in. depth is required for the very smallest pool. 18 in. for the average pool of 40-75 sq. ft. surface area, 24-32 in. for pools 75-100 sq. ft. and 24-30 in. for pools over 100 sq. ft. Depths over 32 in. should never be needed.

A good pool liner will last a lifetime, so before choosing your pool, careful consideration must be given to the different types of lining material available. The table given here will assist you in making a correct decision. Black and Stone
LINERS

Photographs by
DAVIES ENTERPRISES

Butylite are available only from Davies Enterprises of Nantwich, Cheshire.

A pool liner is a flat sheet of waterproof material. When placed in a hole and filled with water it is held in position by the water pressure and requires no fixing. The freedom of design offered by liners may tempt you to an excess of irregularities. These are possible but may be wasteful since the sheet is a rectangle. Simple shapes with straight lines are best, proving more economical and pleasing in design.

Calculations of liner size required are simple. The maximum length of pool = (2 x maximum depth) + width of liner. Maximum width = (2 x maximum depth) - width of liner. For example, a 9 ft by 7 ft pool 18 in. deep requires a 12 ft by 10 ft liner.

Marking out the area for the pool is best done as described above by using a hose or rope. With the aid of a spirit level check the levels. Any variation can be overcome by packing the lowest side of the area with soil and high spots or areas can be cut back.

Excavation can then take place, the hole being cut 3 ins inside the proposed size to allow for final trimming out before completion, but the sides should slope inwards 1 in. for every 3 in. depth. Dig down to 9 in. deep, leave a 9 in. shelf and dig down again. This will then form your marginal shelf 6 in. wide and 9 in. deep. When the required maximum depth is reached the sides can finally be trimmed to the required shape and size. The whole area is then checked for any slight protrusions and these are removed and soft sand is worked in by hand over the sides, shelf and base. On very sandy ground newspapers or polythene can be laid as a safety factor before fitting the liner.

Place the liner over the hole and secure the edges by placing stones around it. Start to fill it with water and, as the liner is drawn into the excavation by its weight, release any excessive tension by lifting the stones. Once it is filled, the surplus material is cut off, but leaving a 4 in. overlap. Edging stones or turf are then laid on the edge around the pool to give the finished effect.

Pool Construction Comparisons

Prices and details given below are based on an 8 ft by 5 ft by 58 in. rectangular pool. The cost for fibre glass and concrete are approximate only.

The life quoted for materials are estimates based on current data and our own experience.

<table>
<thead>
<tr>
<th>Material</th>
<th>Approx. cost</th>
<th>Estimated Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete. Including sand, cement, gravel, waterproofing powder and sealant</td>
<td>£11.75</td>
<td>2 - 20 years</td>
</tr>
<tr>
<td>Butylite (Black) 11 ft x 8 ft liner (Stones) 11 ft x 8 ft liner coloured stone.</td>
<td>£10.56</td>
<td>50 years</td>
</tr>
<tr>
<td>Flexilene 11 ft x 8 ft liner</td>
<td>£12.08</td>
<td>50 years</td>
</tr>
<tr>
<td>Wavelock 12 ft x 9 ft liner (nearest available size)</td>
<td>£15.12</td>
<td></td>
</tr>
<tr>
<td>Juralene 12 ft x 9 ft liner (nearest available size)</td>
<td>£8.65</td>
<td></td>
</tr>
<tr>
<td>Aqualene 12 ft x 9 ft liner (nearest available size)</td>
<td>£7.56</td>
<td></td>
</tr>
<tr>
<td>Fibre glass Prefabricated shell</td>
<td>£50.00</td>
<td>10 years</td>
</tr>
<tr>
<td>Polythene 1 ft x 12 ft liner (500 gauge used double)</td>
<td>£2.83</td>
<td>1 - 2 years</td>
</tr>
</tbody>
</table>

Butylite is a synthetic rubber widely used for reservoirs, and acid and water storage.

Flexilene is a laminated plastic consisting of nylon coated with P.V.C. Wavelock is made up of two P.V.C. laminates reinforced with high tenacity nylon.

Juralene is a special formulation of polyvinyl chloride.

Aqualene is made up of two P.V.C. laminates.

Fibre glass: A number of prefabricated shapes and sizes of pools are available as one-piece rigid mouldings.

Polythene is a relatively thin lining material, suitable only for temporary pools.
BREEDING THE GOLDEN MALAWI CICHLID

First Make Sure You have a Pair!

By N. F. HUBERT

First requisite for breeding this fish is to ensure that you have a pair! I state what appears to be the obvious because of the contrasting coloration of the two sexes. The male of the species grows to approximately 4 in. He is slim with two black and two blue longitudinal stripes. The dorsal, which is the full length of the body, is a bright yellow and the anal fin is black tinged with blue and interspersed with one or two golden dots. On the other hand the female is a slightly smaller fish, of a similar shape, but predominantly golden yellow with black and faint-blue longitudinal stripes. Her dorsal fin is striped yellow and black.

As both sexes are aggressive towards other fish, and the male towards the female, I found it essential on purchasing a pair, to place them in separate tanks or in a tank divided by a pane of glass. The size of the tanks for bringing them into breeding condition is not too important and they will thrive in tanks as small as 18 in. by 12 in. by 12 in. provided that they can see other fish. I covered the bottoms of the tanks with rocks and slates made into small caves. The ideal temperature seems to be around 75°F (24°C). Aged tap water with approximately one-third changed every 3 weeks suits this Nyasa cichlid. As for all our fishes, a varied diet was given: flaked food, chopped maggots and scraps of chopped meat.

When the fish came into breeding condition the colours on both sexes intensified, the female filled out and they started to dig in the gravel. Later experience showed that only when digging has commenced should they be placed together. Digging can often be induced by putting the fish in sight of each other. I found that the absolute minimum size tank for introducing the pair was 24 in. by 12 in. by 12 in., but ideally it should not be less than 36 in. by 12 in. by 12 in. as the courtship is extremely active. The breeding tank also had hiding places and care was taken to ensure there were places in which the female could hide without the male finding her.

Courtship commenced with the male taking up a position 2 or 3 in. in front of the female and vibrating vigorously for a second or two at a time. Whichever way the female turned, the male, with a vigorous darting movement, repositioned himself in front of her and commenced vibrating again. After a few minutes the two fish moved alongside each other head to tail and, whilst moving in very rapid tight circles, appeared to be biting at each other’s anal region. Every now and again the female broke away, laid a few eggs and put them in her mouth before taking up the circling again. It appears likely therefore that the eggs are fertilised in the female’s mouth. When all the eggs were laid she darted away from the male, who viciously attacked her and would have killed her if she had not been able to take refuge in a cave that he could not get into. The female remained hidden until the male was removed from the tank 2 days later.

During the next 25 days the female appeared occasionally from her hiding place. Her mouth and chin gradually grew more distended and she refused all food. On the twenty-sixth day the fry were released from her mouth and she took no further interest in them. The fry were ½ in. long; all 24 were exact replicas of their mother. The female was removed and feeding on brine shrimp, chopped meat and flaked food was commenced immediately. Like most mouth-bred fry they grew rapidly and at only 2 months old they were over 1 in. in size.

The successful courtship I have described took place after 9 months of introducing the pair together at weekly intervals. Each of the previous introductions ended at some stage of the mating with the female being fiercely chased by the male. Before introducing the pair I tried both keeping them separately and also in a divided tank, but neither method appeared to be more successful than the other. Once I tried putting the male into the female’s tank and to my surprise the usual pattern of the male chasing her was reversed and the male was upside down in trouble within a few seconds! This procedure was not repeated.

The real difficulties when breeding this fish are: first making sure you have a pair that are compatible and secondly ascertaining when they are ready to be introduced to each other. I can, however, assure anybody who has the patience that the sight of a shoal of these gold and black striped fry is well worth all the trouble.
Belonging to the frogbit family (Hydrocharitaceae), *Elodea densa* comes from America, growing there over an extensive area stretching from the southern states of the U.S. to Argentina, i.e. in the tropical and sub-tropical zones. It is the tallest-growing species of the genus *Elodea*: the stems can reach a length of over 9 feet and fork along their length. Where the branching occurs roots appear. The leaves, from a light to bright green, are very narrow and lanceolate, and according to the conditions supplied for growth, may be \( \frac{1}{2} \) to \( \frac{3}{4} \) in long and up to \( \frac{1}{4} \) in wide. They are arranged for the most part in whorls of five and their edges are very finely serrated. The flowers seen in the aquarium are male flowers, white and just under \( \frac{1}{4} \) in diameter. Female plants are not found in aquaria.

The plant consumes plenty of limey salts and because of this serves to soften the water. Though it comes from tropical and sub-tropical zones it is not a forest plant and grows in open waters where there is plenty of light and also great fluctuation of temperatures. Therefore although it requires a generous amount of light it is not too exacting with respect to temperature. In fact, it grows well in both tropical and coldwater aquaria.

Its requirements for bottom medium are very modest because although it usually anchors to the bottom with its roots it receives its nutrient through the leaf surface. For this reason it can be cultivated as a floating plant without requiring rooting at all. This is one of the most unpretentious of plants.

At the top of the page the white flower of *Elodea densa* is pictured. Two cuttings (left) show the attractive whorled heads formed at the top of the stems.
Breeding in Bare Tanks

By F. W. COLES

OVER a long period of time and after trying every possible way of fishkeeping, I eventually arrived at the system I now use in my small fish house.

It is well known that the amount of light necessary for growing plants is considerably in excess of the amount the fish themselves require, so that unless growing plants is a particular interest, it is more economical to use considerably less lighting in the fish house and dispense with plants altogether. Indeed there are fanciers who use only a general room light, or just daylight through windows, and this can be quite successful for breeding some varieties, particularly characins, which generally breed more freely when part of the tank is shaded, even in these conditions. Most of the killies respond to this treatment, too.

Many people think that breeding in bare tanks is next to impossible with some fishes, and in some special cases this may be true, but generally speaking, most varieties can be bred if proper arrangements are made. Now, as Professor Joad would have said: 'It depends what you mean by bare tanks'.

If you take a tank just as you purchase it and put it on a stand, fill it, and then put your fishes in you will achieve nothing. The first requisite when setting up a 'bare tank' is to see that the base is really dark. Placing a tank on a plywood base will certainly keep out the light from the tank below, but the base is still much too light, and if, as it usually is, it has been glazed with moulded glass there will be a multitude of reflections from the glass itself. The irregularities are on the underside of the tank, and to eliminate the reflections the best solution is to give the base a couple of coats of black paint before setting the tank up, but still put the plywood base beneath it. This will take care of any pinholes or brushmarks that may have been left in the paint.

The next thing is to cut a piece of hardboard to cover about half the length of the tank front, and hang it there with a couple of clips made from aluminium. Put a piece of 3/16 in. dowel across the darkened end of the tank and hang on to it a couple of nylon mops. Now, if the water is matured, the tank is ready for your stock fish. Under these conditions fish can be kept happy indefinitely, and with a bare tank like this, and a dark base, any uneaten food and faeces can be seen and immediately siphoned off. This is much more difficult in tanks with a gravel base, so that a bare tank can be kept much cleaner. If all the stock tanks are arranged in this way, fishkeeping is less arduous, and servicing time is kept to a minimum.

The breeding tank should be set up in the same way, but the necessary provisions for breeding will need to be added. For egg-scatterers it is satisfactory to make a frame of 1/2 in. square wood, 2 in. less than the inside measurement of the tank each way, and to cover it with small nylon mesh (about 1/4 in.), sticking this on the wood frame with silicone seal or impact adhesive; you will need a couple of stones, one at each end, to weigh it down. The frame should not be nailed or screwed together; as it has no stresses to bear, the corners can be put in the vice and drilled 7/8 in., and a piece of 1/8 in. dowel driven in to make a joint strong enough for the purpose. Metal should be kept out of contact with aquarium water.

For many of the varieties laying adhesive eggs, it is satisfactory to anchor three or four mops on the tank base, and hang over them a mop suspended on 3/16 in. dowel as recommended above.

For cichlids, a rather different procedure is needed. If it is wished to use plant pots it will be better to make a cradle to hold them. This is made from two pieces of thin plywood, with a semicircle cut out to fit the plant pot, and joined together with a piece of 1 in. square. This should be pegged together, as was the nylon net frame, with 1/8 in. dowel, and will be strong enough for the purpose. You will need to hold it down when placing it in position, but the weight of a terracotta plant pot will keep it in place. It is not satisfactory to try to wedge a pot in a corner, and a cradle prevents the pot from scratching the glass of the tank. It is better to remove the whole of the base of the pot; this can be done easily by 'nibbling' it away with a pair of pincers and doesn't take long, even if you are careful. Plastic pots, weighted down with a stone, can be used, but they are not as successful for another reason.

Cichlids are pit spawners largely, and many people say they cannot be bred without using a gravel base. Many varieties have been bred in bare tanks, successfully, and the fishes follow their normal procedure of depositing the eggs in the plant pot. In a gravel-based tank, they would later...
move the fry to a pit they usually dig behind the flower pot. With the pot on a cradle the base of the tank is lower than the pot, and they invariably transfer the fry to the corner behind the pot as their first move. This works satisfactorily and the fish seem quite happy with the arrangement. The fry, when free swimming, can easily be seen against the dark tank base, and the situation is always under control.

Wedge a piece of green plastic, about 2 in. wide and long enough to reach from the bottom front corner of the tank to the frame at the back, can be used. The angels will spawn on this and it can then be removed and the eggs hatched separately if required.

In all these arrangements with cichlids it is better to keep the nylon mops in the tank at the opposite end from the flower pot, to act as a refuge for the chased partner if disagreement occurs. In any case, it is better to remove the parents when the fry are a few days old, to prevent their loss if the parents turn cannibalistic.

---

Readers’ Queries Answered

**Red Sessilis**

The red sessilis I obtained a few weeks ago made a very attractive addition to my tank but the stems have gradually become demoded of leaves. Is this because it has been moved and will it recover in time?

This plant, with its reddish leaves and bright red stems, should really be looked upon as an additional decorative ‘highlight’ to a tank rather than a plant that is going to make a great deal of growth. It requires a good deal of light and reacts very badly by shedding its leaves, to hard water. If you wish to give the plant every advantage it would be advisable to prepare the tank in advance by gradually replacing some of the water with clean rainwater or distilled water, obtaining some new stock of Alternanthera and planting it in the lightest position in the tank.

**Glass Catfish**

I have just purchased some glass catfish and would like to know: the best conditions to keep them in as they look so delicate and I do not want to lose them. I am rather worried whether my red-tailed black sharks will frighten them too much.

It is not a good idea to keep red-tailed black sharks with glass catfish unless you have a very large (24 in.) well-planted tank in which the glass fish can hide away. (It really needs placid-natured or strong-nerved fishes to cope with the continuous wild chase of a group of sharks.) Glass catfishes (Kryptopterus bicirrhis) are happier kept at least in pairs, and preferably in a small shoal. They tend to ‘hang’ in mid-water or swim slowly about the tank. Although members of the Schizotropus family, these catfish are not nocturnal and will not grub about for food at the bottom of the tank. They will eat dried food, but must have live foods such as tubifex worm, white worms and daphnia. Well-aerated, clean tank water kept at a temperature of 75-80°F (24-26°C) is suitable for them.

**Brackish Plants**

I have been told that there are some plants that do well in brackish water and I would like to know what these are, for my brackish water tank.

Your informant may be thinking of Cryptocoryne vittata or Lagenandra orata but it is important to remember that they will tolerate only very low salt content in the water. Both these plants can grow tall, up to 15-20 in., so are more suitable planted in tanks with a depth of 15 in. or more. C. vittata has light to mid-green foliage and is not likely to survive the depredations of snails if you have any in your tank.
brackish water tank. The leaves of the *Laguncularia* are much tougher and might survive quite well.

**Colour of Daphnia**

I have recently lost three goldfish and I think it may be due to the water flow my local shop has been supplying. It has been a very peculiar yellow colour lately and I was a bit worried about using it but did so when my dealer said it was all right. Could the daphnia have caused this death?

Not because it was a yellow colour. The shells of daphnia are almost transparent and the colour showing through depends very largely on the type of food the daphnia have been consuming. Your yellowish daphnia have been feeding on algae and vegetable matter and would be perfectly suitable for feeding to your fish. It is commonly held that red daphnia are more nutritious since they contain more haemoglobin, but the main value of this special protein is that it contains iron.

**What’s New?**

**Food for Pond Fish**

As the pond-keeper’s thoughts turn seriously again to his charges, Cooper Nutrition Products Ltd. (Stepfield, Witham, Essex) are ready with a new coldwater pond fish food, Pond Pride, each single pellet of which, the maker’s claim, provides a well-balanced meal and will float for many hours. Each pellet is composed of fish and vegetable protein, yeast products, shrimp meal and cereals, enriched with mineral trace elements and essential vitamins. The food packs are available in three sizes—minipack, standard and maxi-pack, and sell for recommended prices of 65p, 29p and 60p respectively.

**Club News**

A NEW venture of BRIGHTON & SOUTHERN A.S. is a newsletter to be given free to members and exchanged with other societies. Mr. M. Whittington is the editor. Car stickers are also to be available soon. Now that the Society has changed to monthly meetings there is to be a table show at every meeting, and there is a new venue—the K. & T. Social Club, Franklin Road, Portslade. At the first meeting there Mr. David Soper lectured on feeding and the general wellbeing of fish. He stressed that fish need a varied diet as do humans and recommended fulfilling their protein and vitamin requirements with wheat germ, dried bread, foods, such as beef and vegetable, and on heart. For those having difficulty in hatching brine shrimp or to increase the hatch generally Mr Soper recommended the addition of yeast to the water.

EALING & D. A.S. held their annual Closed Show to bring the 1971/2 season to an end. This was the chance for the skier members to try their fishes on the show bench away from the glaze and occasion of an Open Show, and they made the most of their chances. Over 100 fishes were benched, including entries in the aquascape, furnished aquaria and Rift Valley cichlids classes and despite a very cold day and the threat of snow all went well. Mr H. T. Stowell, FRAS and Mr B. Baker, FRAS judged and made the award for best fish in the show to the *Monoculus argus* entered by Mr. J. Healey.

MR. Dick Richards, secretary of RHONDDA A.S., sends us the following news of his Society. "A vote of thanks is given to Don Embling, our retiring minute secretary, and at the same time a welcome to his replacement, Mr. Towy Clift. In addition a new member has been elected to the committee, Lyn Davies, the editor of our club magazine aptly called the 'Betta-Mag'—not only is it ‘better’ but we aim to make it the best. Our membership is still growing; last year's count was 60. Without a doubt our junior section is the best in Wales, having their own show secretary and in the main organising their own affairs. A warning here to other show secretaries—this lad Colin Gardiner is good and knows his fish! May we take this opportunity to wish every success to the C.N.A.S. and to the Welsh Open Show in August. And in passing, our club contains at present all 'workers'—instead of selling the collection which they should have done they get along and do it."

ROtherham A.S. faced power cuts and bad weather on the day of their third Open Show but the event proved the most successful yet, with 76 entries from 60 exhibitors and a total of 42 societies taking part. The best fish in the show was *Tilapia marri* entered by Mr A. M. Kinsey of Independant A.S., London. Detailed results were as follows:

- **Platies:** 1, Mr. G. Hoekman (Independent A.S.); 2, Mr. G. Ward (Deventer); 3, Mr. B. Sharpe (Pleasant, Gateshead); 4, Mr. J. Lisle (Shrewsbury); 5, Mr. C. Shippam (Chesham). 2, Mr. B. Baker (Briston); 3, Mr. F. Cook (Bristol); 4, Mr. T. Douglas (Halstead); 5, Mr. J. Lisle. (Shrewsbury); 1, Mr. D. Mander (Halstead); 2, Mr. R. Howard (Bromley); 3, Mr. R. Brown (Independent A.S.); 4, Mr. B. Baker. (Bristol); 5, Mr. J. S. Hall (Aldeburgh).
- **Small barbs:** 1, Mr. D. Sewell (Cheltenham); 2, Mr. R. Brown (Bromley); 3, Mr. A. Haddon (Hastings); 4, Mr. J. Lisle (Shrewsbury); 5, Mr. B. Baker (Bristol).
- **Clown barbs:** 1, Mr. A. Haddon (Hastings); 2, Mr. J. Lisle (Shrewsbury); 3, Mr. D. Sewell (Cheltenham); 4, Mr. R. Brown (Bromley); 5, Mr. C. Shippam (Chesham).
- **Guppies:** 1, Mr. B. Baker (Bristol); 2, Mr. G. Hoekman (Independent A.S.); 3, Mrs. Rhodes (Four Stars); 4, Mr. A. Burrey (Southend); 5, Mr. J. Lisle (Shrewsbury). 1, Mr. B. Baker. (Bristol); 2, Mr. J. Lisle (Shrewsbury); 3, Mr. D. Sewell (Cheltenham); 4, Mr. R. Brown (Bromley); 5, Mr. A. Haddon (Hastings).
FEDERATION
Class
N
E
Shows Eligible for
W
The 1972 Supreme
S
Championship

Championship Fish Classes at Forthcoming Shows

<table>
<thead>
<tr>
<th>Date</th>
<th>Fish Class</th>
<th>Breeder</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st April</td>
<td>Runnymede A.S.</td>
<td>R* Platy</td>
</tr>
<tr>
<td>2nd-3rd April</td>
<td>Tottenham &amp; D. A.S.</td>
<td>D* Cichlid</td>
</tr>
<tr>
<td>5th April</td>
<td>Stockton-on-Tees A.S.</td>
<td>Db* Apistogramma etc.</td>
</tr>
<tr>
<td>6th April</td>
<td>Medway A.S.</td>
<td>Ba* Barbs</td>
</tr>
<tr>
<td>22nd April</td>
<td>Tharrock A.S.</td>
<td>G* Tropical catfish</td>
</tr>
<tr>
<td>24th April</td>
<td>Independent A.S.</td>
<td>Da* Guppy female</td>
</tr>
<tr>
<td>27th April</td>
<td>Uxbridge A.S.</td>
<td>Dc* Angels</td>
</tr>
<tr>
<td>7th May</td>
<td>Rochampton A.S.</td>
<td>Dc* Rift Valley cichlid</td>
</tr>
<tr>
<td>15th May</td>
<td>Ilfracombe &amp; D. A.S.</td>
<td>Ya* Tropical marine</td>
</tr>
<tr>
<td>22nd May</td>
<td>Southend, Leigh &amp; D. A.S.</td>
<td>S* Mollie</td>
</tr>
<tr>
<td>21st May</td>
<td>Yeovil &amp; D. A.S.</td>
<td>Nb-m Pairs</td>
</tr>
<tr>
<td>28th May</td>
<td>Corby &amp; D. A.S.</td>
<td>H* Corydoras &amp; Broschis</td>
</tr>
<tr>
<td>4th June</td>
<td>Half Moon A.S.</td>
<td>Xo-t Breeders</td>
</tr>
<tr>
<td>11th June</td>
<td>High Wycombe A.S.</td>
<td>K* Danio &amp; W.C.M.M.</td>
</tr>
<tr>
<td>17th June</td>
<td>Riverside A.S.</td>
<td>T* Assorted fish</td>
</tr>
<tr>
<td>24th June</td>
<td>Anson A.S.</td>
<td>V* Twisted goldfish</td>
</tr>
<tr>
<td>27th June</td>
<td>Gosport &amp; D. A.S.</td>
<td>Ea* Fighters</td>
</tr>
<tr>
<td>2nd July</td>
<td>Exeter &amp; D. A.S.</td>
<td>Ya* Goldfish</td>
</tr>
<tr>
<td>8th July</td>
<td>Basingstoke &amp; D. A.S.</td>
<td>Ch* Coldwater marine</td>
</tr>
<tr>
<td>22nd July</td>
<td>Port Talbot &amp; D. A.S.</td>
<td>W* Nanostomus &amp; frye</td>
</tr>
<tr>
<td>31st August</td>
<td>Portsmouth A.S.</td>
<td>Eh* Coldwater</td>
</tr>
<tr>
<td>6th August</td>
<td>Tonbridge &amp; D. A.S.</td>
<td>L* Loach</td>
</tr>
<tr>
<td>14th August</td>
<td>Bracknell A.S.</td>
<td>J* Rasbora</td>
</tr>
<tr>
<td>19th August</td>
<td>S.P.A.S.S., Kingston</td>
<td>L* Single-finned perch</td>
</tr>
<tr>
<td>26th August</td>
<td>Plymouth A.S.</td>
<td>No-t Pairs</td>
</tr>
<tr>
<td>29th September</td>
<td>Beithal Green A.S.</td>
<td>O* Guppy male</td>
</tr>
<tr>
<td>3rd September</td>
<td>Welleslingborough &amp; D. A.S.</td>
<td>B* Barbs</td>
</tr>
<tr>
<td>16th September</td>
<td>Weymouth &amp; D. A.S.</td>
<td>XB-M Breeders</td>
</tr>
<tr>
<td>16th September</td>
<td>Hounslow &amp; D. A.S.</td>
<td>F* Egg laying totoctoarchers</td>
</tr>
<tr>
<td>24th September</td>
<td>Torbay A.S.</td>
<td>Ca* Hyphessobrycon etc.</td>
</tr>
</tbody>
</table>

* Winners of Federation Championship Trophies in classes for single fish automatically become eligible for the Supreme Championship Trophy Competition, which will be staged at the AQUARIUM SHOW ’72 at the Royal Horticultural Society’s Old Hall, London, S.W.1, 27th-29th October. Six awards are made at this Competition.

NO less than 112 new affiliations to the Federation, from north-east England and one from Scotland, have been obtained as a result of a personal visit by chairman Mr. R. E. Wood and Mr. C. A. T. Brown to Newcastle. This was reported to a crowded Assembly of delegates last month that included representatives from Colne and Walses. An innovation reported for shows was use of the small letter 'y' suffixed to Class capital letters to denote Junior Classes (not applicable to furnished aquaria classes). A proposed set of rules for the judging of single marine fish show entries drawn up by the BMMAA has been approved by the Federation and it is hoped that these will be coming into use. Mr. Ron Kerridge was announced to be the show secretary for the AQUARIUM SHOW ’72 and Mr. David Watts is assistant show secretary; other members of the AQUARIUM SHOW ’72 FRAS show committee are Mr. C. A. T. Brown (chairman), Mr. W. R. Sheerin (secretary), Mr. A. Blake, Mr. T. Glass, Mr. F. Glynn (for GSGB) and
Mr F. C. Tomkies. The Federation's list of donated Perpetual trophies has been extended by the addition of the Bracknell Plaque for Rushoras. At the March Assembly FBAS Certificates of Merit were awarded by the Council to Mr Stan Cowell in recognition of the fishkeeping skill represented by his numerous successes on the Show bench with a single Ctenopoma kingianum, and to Mr Maurice Carter for similar skill represented by five show seasons of successes with a Biotia edithrochata. Together with the announcement of the retirement from the Speakers' List of Mr H. N. Allies of Torquay the thanks of the Federation for his past services were recorded and wishes for a long and happy retirement were expressed at the meeting.

LOUGHBOROUGH & D. A.S.'s fifth annual presentation dinner and dance proved a great success. Mrs J. Slack, the president's wife, presented the year's awards to the following:

Chairman's shield for the most points gained at table shows in 1972, Mr G. Taylor.
A black moor owned by Mr G. Taylor was shown as the best aged guppy. Best breed of guppies: 1. Mr G. Taylor; 2. Mr B. Street.
Ponded aquarium: 1 and 3, Mr M. Walker; 2, Mr D. Keeler. Best aquaria: 1 and 2, Mr G. Taylor; 3, Mr D. Wood.
Mr G. Taylor, Amphiplois; 1, Mr T. Pavley; 2, Mr M. Walker; 3, Mr G. Lindley.
Cichlids: Mr G. Taylor, Chilambra; 1, Mr M. Walker; 2, Mr T. Pavley; 3, Mr G. Lindley.
Cardinals: Mr G. Taylor, Cardinal; 1, Mr M. Walker; 2, Mr T. Pavley; 3, Mr G. Lindley.
Pond: 1, Mr T. Pavley; 2 and 3, Mr M. Walker.
Rushoras: 1 and 2, Mr G. Lindley; 3, Mr G. Taylor, Cardinales; 1 to 3, Mr G. Taylor.
Rushoras, danios, minnows: 1 and 3, Mr B. Street; 2, Mr G. Lindley.

MID-SUSSEX A.S. felt privileged to have Dr N. Carrington as their guest speaker recently, since as managing director of Inter Pet, one of Britain's leading manufacturers of aquatic equipment, Dr Carrington is singularly well qualified to talk about fishkeeping techniques. Everyone, from beginner to expert, was able to learn more about their hobby, and many interesting points were raised during the question period including a full technical explanation of the influence various types of lighting arrangements can have on the growth of plants and baby fishes.

BECAUSE of the success of last year's Breeder Show, EAST LONDON A. & P.A. plan to stage an even larger show this year on 24th October with 12 fish breeder classes and 5 furnished aquarium and plant classes. There are 35 trophies, and plaques for the first three places, as well as prizes of equipment as last year. Judges will be Mr Ed. Nicholl, Mr Cyril Brown, Mr Pete Ginge and Mr Jack Wilson. Booking will be available from 8.0 p.m. Friday, 6th October to 9.0 a.m. Saturday, 7th October, and entries will be on duty throughout the night, Schedules will be available shortly from Mr F. Vicker, 13 Irons Way, Romford, Essex.

Many present were also surprised to learn that duckweed tends to absorb calcium, thereby producing softer water at negligible cost.

Mr R. Elms of the PGA praised the high standard of the fish he had been asked to judge. Class winners were:

Male guppies: 1. M. D. Forder; 2. Mr G. Leech; 3. Mr J. Thornes. Female guppies: 1 and 3, Mr B. Williams; 2, Mr D. Soper. Guppy pairs: 1. Mr B. Williams; 2 and 3, Mr G. Leech; juniors, Miss Judith Soper. The Novice Special award was won by Mr P. Banks, who attended the meeting despite injuries received in a recent accident. A silver spoon was presented to Mr B. Williams for the best fish in the show.

MAGNIFICENT plants and disease-free fish will abound in the tanks of members of HOUNSLOW & D. A.S. who have been fortunate in attending lectures on these subjects by Mr R. Forder of Uxbridge and Mr J. Thornes. Mr Forder outlined the methods used to simulate the plants' natural growing conditions and the water condition needed to bring some of the rarer plants into bloom. Mr John Thornes, vice-president of the Society, who was an enthusiastic amateur fishkeeper and is now turned professional, was able to view the problem of fish diseases from both the hobbyists' and the dealers' points of view; his listeners appreciated the very clear descriptions of various signs and symptoms of disease displayed by an ailing fish and the detailed instructions given for treating it.

BISHOPS CLEEVE A.S. table show results recently have been as follows:

Tanks of four egaplaes: 1 and 2, Mr G. Dosley; 3, Mr A. Hedges. Platya: 1, Mr J. Hocking; 2, Mr R. Smith; 3, Mr P. Greenwood, A.A.D.; tropical: 1 and 2, Mr M. Kitchen, 3, Mr P. Tattersfield; Guppies: 1, Mr P. Greenwood; 2, Mr R. Smith; 3, Mr A. Hedges, Lohmeyers: 1, Mr G. Dosley; 2 and 3, Mr P. Greenwood.

The Society now meets at The British Legion Club on the first Wednesday of the month.

A PARTY numbering 41 people boarded the coach for the trip organised by NOMAD A.C. to visit the tropical fish breeding establish-
In Brief . . .

... THE coldest night of the winter did not deter 54 members of EAST KILBRIDE A.C. from attending when Mr Steve Naismith spoke on Corydoras catfish. Mr Naismith judged the table show; awards were made to the following class winners: Seniors, Corydoras, Mr J. Queen; a.o.c., catfish, Mr J. McIlvan; Juniors, Corydoras, K. McKenna; a.o.c., catfish, J. McLaughlan.

... AN average attendance of 60 at the Sales of Plants by the YMCA A. & P.A. has caused a change of venue to the YMCA Hall, Norwich Road, Ipswich (second Monday of each month). John Chapman, junior member, won in the table show class for coldwater breeding pairs and Mr G. Richardson in that for tropical breeding pairs.

... A SLIDE show and tape by Mr A. T. Brown on 'Judging Fish' was greatly enjoyed by members of STEVENAGE A.S. At this meeting the quiz was won by Mr Pennoore. A talk on filtration by Mr G. S. Adams of Hermitage Tropicales, Hitchin also proved popular.

... A RECORD number of 37 attended the February meeting of WEMYTH & D.A.S, to watch a demonstration on 'The Furnished Aquarium' by Mr R. Forrester arranged a 'Twenty Question' quiz with Mr C. Carter, Mr A. Billington, Mr T. Jones and Mr A. Woold on the panel. Table show winners (16 entries) were: male guppies, Mr A. Woold; female guppies, 1, 2 and 3, Mr T. Jones.

... THE discussion inaugurated by the secretary on general fishkeeping topics aroused much interest amongst PRIVATEERS A.S. (Shepley, Yorks.) members and lasted the whole 2 hours available. Secretary Mr W. Nicholas reports that it was most encouraging to see so many new members and to find them expressing their views, along with the more experienced aquarists present.

... MR W. HAM of BRISTOL A.S. gave many useful tips to fellow members when lecturing on 'One man and his pond'. He advocated a site in full sun for water lilies, which should be planted in baskets or up and suggested the background should also be considered as it provided colour by reflection. Claiming to be old-fashioned when stocky the pond he personally preferred gold orfe, golden tench and goldfish,

... TOTTENHAM & D. A.S. have been completing arrangements for their Silver Jubilee Open Show on 20th March and 1st April but this did not prevent them enjoying the interesting meeting at which Mr K. Massey discussed 'The Fish House'—so be pursued further since Mr Massey has agreed to return visit—and Mr H. V. Vinal spoke as a retailer of aquatic requirements.

... OF special interest to new members was the talk by Mr John Wheeler of Bradford-on-Avon to YEVOIL & D.A.S. on many aspects of fishkeeping including the conditioning of fish for the show bench. Established members toopicked up many hints for the forthcoming show season. Judge Mr S. Langdon awarded first place in the table show class for a.v. catfish, loach and eels to Mr T. Hunt. Disappointment of the evening was the disqualification of the best fish, entered by Mr A. H. Rendell, since it had been shown in a sweet jar.

... WITH the increasing popularity of Nishikigoi during recent years, a busy subscriber's exchange virus on the successful keeping of these beautiful Japanese fancy carp formed THE BRITISH KOI-KEEPERS SOCIETY. As a result beginning less than a years ago, and evidence of the wide interest aroused by enthusiasts, the membership of the Society now exceeds one hundred and it may well be one of the largest specialist societies in the country.

... Newsletter are sent to all members containing articles on quarantining, feeding, breeding etc., and many useful ideas are exchanged. At least two meetings are held annually in London. New members are welcome and details of membership will be sent upon application to the secretary, Mrs H. Allen, 11, Anthony Close, Francis Gardens, Peterborough.

... At the recent KEIGHLEY A.S. meeting Mr Alex Firth of Bradford led a general discussion on fishkeeping and answered members' questions. Winners in the table show classes (13 entries) were: any pair, Mr Sagar; a.o.c., Mrs Beckett; novice a.o.c., Mr G. D. Haste; junior a.o.c., Master Cutting.

... HAMPSTEAD & D. A.S. members thoroughly enjoyed the meeting at which Mr T. Glass presented his talk and slide show on killifish. The table show for characins, rasboras, danios, minnows attracted 16 entries in each class.

... IS your rise of Valley eel boy a potential Supreme Champion Fish for 1972? If so make haste to enter in the FBAS Championship Class D for this group of fishes (see page 537 of April for March), which this year is on the schedule of the ROEHAMPTON A.S. Open Show (4th May—see 'Dates for Your Diary')

... LAST year was one of consolidation and expansion for SOUTHAMPTON A.S. with well-attended meetings to hear first-class speakers and record entries in table shows. Local trader Mr Derek Jones was unanimously elected as the new chairman. Mr Jones has given a slide show, with commentary by several members.

... CARSHALTON & D. A.S. think all those who attended their annual dance and made it such a success. The club has recently enjoyed a talk by Mr Frank Tomkins, (Mr J. B. Psaila in the a.v. tropical fish class in the table show).

... MR DEREK JONES provided members of NEW FOREST A.S. with an enjoyable evening's entertainment with his talk and colour slides. Slides of fish spawning, including Siamese fighters and angel fish, of set-ups for breeding other varieties, of fish at Belle Vue, and a series devoted to cichlids enabled the audience to pick up many useful tips.

... NEW member Mr Stockley won in the catfish and loach class at a recent meeting of DORCHESTER & D. A.S. (1, Mr Taylor; 2, Mr Goodchild) whose members enjoyed the second lecture given by Mr Billington on setting up an aquarium.

... OLD friends and rivals from Reading were welcomed by DIDDICOTT & D. A.S. at a 12-a-side match, judged by Mr D. Hanscock. The match resulted in a draw (20 points each). (1. Mr R. Turner, Didcot, male guppy, 96 points; 2 and 3, Mr R. Drummer, Reading, 791, 790.)

... MEMBERS wanted! New Society UNITED A.S. welcomes new members at meetings. See Meetings and Changes of Officers in this issue.

... WELBECK A.S. is a new Society formed in Castleford. Meetings are held on the third Wednesday of the month in a private room at The Royal British Legion Club, Welbeck Street, 7.30 p.m. and secretary Mrs J. E. Asquith extends a cordial invitation to anyone interested.

... People with children are
welcome. Societies holding open shows are invited to send schedules to her at 32 Lower Oxford Street, Castleford, Yorks WF10 4AE.

FORMED only in October 1971, SOUTH SHIELDS A.S. now has 46 members. Meetings are held fortnightly at The Neptune Hotel, South Shields.

ILFORD & D. A. & P.S. learnt a great deal from Mr Bernard Pye's lecture and slides on sword plants and cryptrocytes. Mr Seaman was awarded first and second place in the miniature furnished show jar competition (1, Mr M. Perry). The Society met at St Lawrence Church Hall, Hamilton Avenue, Berkingside and a lecture is provisionally arranged for Monday, 15th April.

This is a special one for BRADFORD & D. A.S.—their tenth anniversary. The Society are holding their annual inter-society show on 19th April and the entrance fee includes unlimited entries and a supper, plus an auction.

... TORBAY A.S. juniors are challenging the seniors strongly at table shows. At the competition for swords, danio, and monopterus, junior entries outnumbered the seniors by 17 to 7. Winners were: seniors, Mr T. Woolley, Seniors: 1, and 2, Master R. Jones; 3, Master C. Bragg; Juniors: 1, Master C. Bragg; 2, Master Coleman; 3, Master Smith. At this meeting Miss Waley from Pugston Zoo gave the lecture.

... BRISTOL T.F.C. welcomed many new faces at their February meeting. This featured a quiz on the lines of 'University Challenge', devised by Mr P. Lewis and Mr Lawrence with slides by Mr G. Churchill. Plans for the Society's 3-day Open Show in June are now well advanced.

### Dates for Your Diary

Dates preceded by * are of shows to which PBAS Championship Classes are allocated.

1st April. RUNNYMEDE A.S. Open Show. Exford School, Ashdon, Middlesex. Details: Mr K. Smith, 17 St Anne's Avenue, Stonyhill, Banstead, Surrey.


3rd April. SOUTHAMPTON & D. A.S. Open Show. Avenue Hall, Southampton. Schedule: Mr M. Mead, 36 Wakefield Road, Bitterne, Southampton.


5th April. SHEFFIELD & D. A.S. Open Show. Green College, Grimesthorpe Road (off Railway Station), Sheffield. Schedule: Mr J. T. Jones, 16 Barcombe Crescent, Sheffield 16.

6th April. STOCKTON-ON-TEES Open Show. St Peter's Park, Stockton-on-Tees. Schedule: Mr T. Laws, 1 York Crescent, Billingham, Teesside.


8th April. MIDWAY A.S. Open Show. St John Fisher School, Ormskirk Street, Chatham, Kent (in Full Moon at Chatham Station). Schedules: Mr J. Marshall, 47 Darton Road, Chatham, Kent (phone Medway 57713).


10th April. YORK & D. A.S. Open Show. Folk Hall, New Earswick, York. Schedule: Mr M. Booth, 8 Susan Place, Harrogate, York.

11th April. MIDLAND AQUARISTS' LEAGUE SHOW. Sports Centre, Groveby Street, Loughborough, Open Classes: a.v. siphoned, x.v. artemia, x.v. betta, x.v. eels. Broaching, noon to 6.30 p.m. Details: Mr T. Perry, 4 Redditch Road, Loughborough, Leics.


19th April. UXBRIDGE & D. A.S. Schedule: Mr J. Marshall, 47 Darton Road, Chatham, Kent (phone Medway 57713).

**22nd April. TURBROCK A.S.** Open Show. Park School, Bridge Road, Green, Essex. Schedule: Mr M. Owen, 32 Toward Road, South Chingford, E.4. Phone 347 7813.


24th April. MIDLAND AQUARISTS' LEAGUE SHOW. Sports Centre, Groveby Street, Loughborough, Open Classes: ev. siphoned, x.v. artemia, x.v. betta, x.v. eels. Broaching, noon to 6.30 p.m. Details: Mr T. Perry, 4 Redditch Road, Loughborough, Leics.


29th April. UXBRIDGE & D. A.S. Schedule: Mr J. Marshall, 47 Darton Road, Chatham, Kent (phone Medway 57713).

2nd May. AQUARISTS FILM SHOW (M. Jones and M. Watts) organised by London's Fifth Annual Exhibition of Fishkeeping

### The AQUARIUM SHOW '72

**Friday 27th October to Sunday 29th October**

at the Royal Horticultural Society's Old Hall, London S.W.1

All enquiries to the Show Organiser,

PFM, 554 Garratt Lane, London SW17 0NY Phone 01-947 2805

**NAME**

Names of the Patrons of the Bishops Cleeve A.S. will be recognised at once by aquarists: Dr Herbert Axelson (U.S.A.) and Dr Gunther Studer (Germany). Badge of the club is a silver replica of the red-tailed black shark. Started in January 1969, official founding of the Society was in April 1969. Up to the end of 1971 it was the boast of the Society that they had never lost an interclub match. Meetings are held on the first Wednesday of each month, 7.30 p.m., at the Labour Club, Royal Wooton Bassett, Royal Crescent, Cheltenham. Secretary is Mr P. Stone, Waverley, 54 Ashchurch Road, Newton, Tetbury, Glos.

Open Show. G.P.O. Motor Repair Depot, Willow Tree Lane, Yeading Lane, Yeading, Hayes, Middlesex. Schedule: Mr N. H. Lee, 33 Airside Road, Eltham, London, SE4 5PD.

30th April. GSSGB Visit to Isle of Wight A.S. All friends and relatives of members invited. Enquiries: Mrs M. Dudley, 192 South Park Road, Withington, Salford, Manchester, M21 9BQ.

3rd May. BLAKEBOROUGH A.S. Open Show. Cirencester, J. Blakeborough & Sons Ltd., Bingley. Details to follow.

5th May. COVENTRY POOL AQUARIUM SOCIETY. Open Show. Fosseway Community Centre, Fosseway Road, Coventry, Details to follow.

5th May. AQUARISTS FILM SHOW (M. Jones and M. Watts) organised by...


4th May. ROUTHHAMPTON A.S. First Open Show. Ash Parsons Hall, Alden Road, Bournemouth, Dorset. Schedule: Mr. J. Lambeth, 7, Wheelbar Court, Florence Street, London, SW 11 6AX (phone 84-30 6761).


14th May. HULL A.S. Open Show.}


14th May. DERBY REGENT A.S. Open Show. St. Mary Church Hall, Derby Road, Swadlincote, Derby. Details: Mr. J. C. Metcalfe, 17, Pemberton Road, Derby (phone 424-324).

14th May. LEICESTER FISHERKEEPER’S Club Open Show. St. Marks Church Hall, Belgrave Road, Leicester. Chairman: Mr. B. D. Beswick, 5, Middlesex Street, Leicester LE. 50X.

21st May. NORTH AMERICAN A.S. Open Show. The Old Schoolroom, 12, Welford Road, Windrush, Gloucester. Chairmen: Mr. E. B. Pemberton, 13, Welford Road, Windrush, Gloucester.

21st May. IVORY & D.A.S. Open Show. The School Hall, Church Street, Shrewsbury. Chairmen: Mr. J. E. Speed, 8, Hillside Farm, Baschurch, Shrewsbury.


24th May. BOSTON A.S. Open Show. Blackfriars Theatre, Spurrier Road, Boston. Chairman: Mr. T. Noble, 17, Wod Farm Road, Boston.

28th May. CORSBY & D.A.S. Open Show. The Roxy, 176, King Street, Wirral. Chairman: Mr. A. M. Rose, 3, Bishops Avenue, Wirral.


4th June. GOSFORD & D.A.S. Open Show. Crofton Community Association Hall, 92, Abbey Road, Gosforth. Schedule: Mr. P. H. Haward, 5, Locketts Road, Park Gate, Southport, Lancs.

4th June. CASTLEFORD & D.A.S. Open Show. Carplets Community Centre, Castleford, West Yorks. Details: Mr. B. Brem, 15, Victoria Drive, Castleford, Yorks (phone 91-311820).


4th June. BOURNEMOUTH A.S. Open Show. A.S. Community Centre, Poole Park, Bournemouth. Schedule (after 1st May): Mr. J. V. Jeffrey, 8, Reeves Avenue, Southbourne, Bournemouth, BH2 1XJ. No entries accepted at door.


4th June. LLANTYNT MAJOR A.S. Open Show. Church, Llantrisant. Details: Mr. P. E. Haywood Hall, Details: Mr. A. E. Bland, 54, St Mary's Avenue, Barry, Glamorgan.


16th June. SOUTH SHIELDS A.S. First Open Show. Details: Mr. G. Porter, 223, Eldike Street, South Shields, Co. Durham NE31 9QL.

17th June. SALISBURY A.S. Open Show. School House, Church Street, Salisbury. Details: Mr. R. J. Tromans, 19, London Road, Chingford, Essex.

17th June. GLOSOF A.S. Open Show. The Recreation Centre, Tullis Street, Gloucester. Details: Mrs. M. Brough, 9, Water- side, Hafod, Hafod, Gloucester.

24th June. BRENTFORD A.S. Open Show. Congregational Church Hall, Newton Road (off Shakespeare Road), Brentford. Schedule: Mr. L. M. Evans, 2, Southpark Road, Brentford, Middlesex.

24th June. ANSON A.S. Open Show. Details to follow.

24th June. MID-HERTS A.S. Open Show. Held in conjunction with Cllr Barnes Fete, Cell Barnes Hospital, St Albans. Details: Mr. C. A. Wither, 17, Charmond Street, St Albans, Herts.

24th June. ALFRED A. Open Show. Adult Education Centre, Henley Road, Aldershot. Schedule: Mr. P. R. Buckland, 6, Hirtling, 21, Meadow Close, Eversden, Nanc.

24th June. PLYMOUTH D.A. & P.S. Open Show. Tavistock, Plymouth. Details: Mr. T. J. Rundle, 22, Durham Drive, Lipson, Plymouth, Devon.

24th June. REINNAG GREEN A.S. Open Show. Details to follow.
NORWOOD AQUARIUM

London's Leading Wholesale Suppliers of Aquatic Equipment
Prompt and Reliable Service to Retailers
24 KNIGHTS HILL, LONDON S.E.27 Phone 01-670 6908

17th September, YATE & D. A.S. Open Show, Newnham Centre, Yate, Chipping Southgate, Glass, Schnauzer. Mr. A. Eames, 41 Springfield Road, Yate. (Phone: Chipping Southgate 311944).

25th September, LUCAS & P.R. Open Show, Joseph Lucas Ltd., Gara no. 5, Spring Road, Exmouth, Devon. Details: Mr. V. H. Lucas, 45 Green Road, Exmouth. (Phone: Exmouth 3612).

2nd September, Wellingborough & D. A.S. The Bull Hall, Wellingborough, Glass. Mr. D. Thomas, 14 George Street, Wellingborough.

17th September, Whitney Bay A.S. Open Show, Impression Hall, Whitney Bay, Northumberland. Shows held at Whitby Sands. (Phone: Whitby Sands 4270).

17th September, Weymouth & D. A.S. Open Show, Small Street Hall, Details: Mr. R. J. Jones, 41 Ludlow Road, Weymouth, Dorset.

17th September, Nuneaton A.S. Open Show, Friary Youth Centre, Abbey Street, Nuneaton. Details: Mrs. M. J. Nitsch. (Phone: Nuneaton 42598).

17th September, Brighton & Southern A.S. Open Show, The Manor Centre, Marchmont Road, Hove, Sussex.

17th September, Bristol Aquarists Society Open Show, 18 Michaela Parish, Hull, Barnsley. Details: Mr. H. H. Thomas, 8 Grove Park, Bristol BS6 4PP.

17th September, Havant & D. A.S. Open Show, Erwood Hall, Putney, London. Details: Mr. V. R. Halsey, 120 London Road, Weymouth, Hants.

17th September, Rounslow & D. A.S. Open Show, Hanwell Youth Centre, Cead Road, Ealing.


27th September, Northampton & D. A.S. Open Show. (Details to follow).

25th September, Osborne A.S. Open Show, Rennie Hall, Refuge Street, Oldham, Lancashire. Details: Mr. J. J. Johnson, 2 Refuge St., Shaw, Oldham, Lancashire.


7th October, RASG Meeting. Ferrers Lecture Hall, London Zoo, Regents Park, 2.30 p.m. All welcome. Tickets from Mr. F. K. Kucher, Highcliffe, Old Hill, Wokingham, Surrey.

7th October, East London & F.A. Open Breeder's Show, Ripple Road School, Rickmansworth, Essex. (Details: 9.6 p.m. 7th, Schedule: 1st, 3rd, 5th, 6th London, 3rd Thames, 3rd Essex). Details: Mr. F. K. Kucher, 11 Trinity Way, Romford, Essex.

- PURE DEIONISED WATER OF YOUR CHOICE
- pH 5.5... OR ... pH 6.8
- PURE... OR ... ULTRA PURE

Now, you can provide the exact water conditions for your fish to thrive and multiply. Eigerat 500 gives a choice of two soft water qualities—instantly, at the turn of a tap—no chemicals, no fuss, no danger. Eigerat 500: the original aquaria deioniser.

Send 3p stamp for details to:
FURADRAW, 5 Beech Avenue, Lane End, Bucks.

FEDERATION OF NORTHERN AQUARIUM SOCIETIES

Change of Secretary:
IAN WOOD
8 HEAPY CLOSE
BURY, LANCs
Phone: 061-764 8981

FOR HEALTHY TROPICAL FISH AND WELL ESTABLISHED PLANTS

WINGATE 7 MARKET STREET WINCHESTER
Main stockists of JUVEL and GEM aquaria. Retail and Wholesale
Phone 2406
Classified ADVERTISEMENTS

AQUATIC SUPPLIERS

OVER 100 VARIETIES of live tropical fish from Hong Kong. Highest quality, prompt service, live arrival guaranteed. Please write for price list on your business letterhead to: Lidk & Brothers & Co., P.O. Box K-3370, Kowloon, Hong Kong.

FERNWOOD AQUARIUM, 132 Havant Road, Hayling Island. Open for the sale of fish and plants until 5 p.m. Sundays.

OVER 120 VARIETIES tropical, marine and pond fish—for personal shoppers only. Kingsferry, 208 Craydon Road, Beckenham, Kent. Phone: 01-650 3716. Closed Wedsdays.

M.S. TROPICAL FISH (Maurice Stray—Aquarist), Church Road, Bishops Cleeve, nr Cheltenham, Glos. We have the finest selection of tropical marines in Gloucestershire; also a comprehensive selection of freshwater tropicals, plants, and all other aquarists' requirements. Phone: 0246-207 0077. Open until 9.30 p.m. weekdays.

FOR THE LARGEST SELECTION OF TROPICAL FISH IN LANCASHIRE you must come to Aqua Hobby Ltd., 4 Bridge Road, Blundellsands, Liverpool 23. We also stock marine and coldwater fish, and all aquatic accessories. Open 11.00 a.m.—6.00 p.m. Tuesday and Wednesday; open until 8.00. Thursday and Friday nights: 9.00 a.m.—6.00 p.m. Phone: 051-924 7947.

FREE! Lists of pools; aquarium accessories; filters, pumps, etc. R.A. Tropical (Services Dept.), 11 Harpsden Road, Henley, Oxon.

LOOKING AROUND FOR SOMETHING DIFFERENT? We might have it at Limestone Tropicals, Lime Farm, Stanford Bridge, nr. Tarvin, Chester, where we sell well-fed fish, supported by separate quarantine house. Open Tuesdays and Fridays from 7.30 p.m. to 2-5 p.m. Phone Tarvin 40333.

FISH

TIGER OSCARS. 3 pairs (5-7 in.). £10 each pair. 01-841 0181.

REPTILES

REPTILES, AMPHIBIANS. Free list. J. & D. Naturalists, 51 Sandy Road, Southsea, Liverpool, 21.

REPTILES—AMPHIBIANS. World-wide selection from direct importer. S.a.e. for current list. Robert A.

CLASSIFIED ADVERTISEMENTS

Bullock (Herpetologist), 165 Radwinter Road, Saffron Walden, Essex.

WATER PLANTS

PERRYS FOR PLANTS ALL TANK GROWN. 1st and 2nd Award Winning Aquarists' Festival. Assorted selections tropical or cold, 50p, 75p, £1. Full flora, S. nanus, 50p doz. Cryptocoryne beckettii, william, humboldtii, 12p each; six assorted 50p; C. indica, 20p. Water iris, giant hygrophila, 12p; Post 5p; C. R. Perry, Professional Aquarist, 615 West Street, Crewe.

DIFFERENT tropical plants. S.a.e. lists. Trade invited. Chin-Li Aquatics, Eric Road, Calstock, Cornwall.


EQUIPMENT

AQUARIUM FRAMES, SHADES as yearls, 14 x 14 x 4 steel angle. 48 x 15 x 12 in. £3.00; 48 x 18 x 12 in. £3.00. 60 x 12 x 12 in. £4.00—any size. Aluminium shades 48 x 12 x 12 in. £2.50; 60 x 15 x 12 in. £3.00. Complete units: 24 x 15 x 12 in. frame, stand, shade £35.00; 30 x 15 x 12 in. frame, stand, shade £45.00; 36 x 15 x 12 in. frame, stand, shade £50.00. Carrs. paid, money back guarantee. Complete list, s.a.e. Hockney Engineers, Derwent Place, Leeds 11. Phone: 255061.

RUSTPROOF AQUARIUM, ornamental stands, glazing cement. Equipment manufacturers: s.a.e. Westby, Barton, Ormskirk.

MISCELLANEOUS

BADGES. Every Society needs bright enamel badges. For best service and quality contact R. E. V. Gomm Ltd., 115 High Street, Birmingham B1 3HE.


SHIELDS, CORALS, widest choice also glass lamps and clippings. Trade only. Price lists from Halesowen Horn Company Ltd., 136 Stourbridge Road, Halesowen, Worcs. Phone: 021-550 4666.

GARDEN CENTRE SALESMAN required to build up water garden and aquarium department in large centre. Knowledge of Local Anglers Nurseries Ltd., Woking, Surrey.

BOOKS

BIND your copies of FETISH MONTHLY and receive them. Binders £3 (S) each post free from P&H offices.

100 P. E.B.A.S. SHOW FISH GUIDES and Technical Information, 24 pages, TRADE COPY, Travel Fish Guide, 554 Garratt Lane, London, SW17/6NY.
Introducing the......
WINDMILL BOOSTER AIR LIFT

The lives of Tropical, Marine and Coldwater fishes are at the mercy of the limited environment, and their lives depend on the rate of the vital conversions of water within the limited capacity of the aquarium.

The WINDMILL DOUBLE POWER LIFT, with its twin stones, gives a head of water from 4' to 6' above water level with an average air pump.

We have tested the WINDMILL POWER LIFT with the lowest priced vibrator pump—although the lift does not reach maximum lifting capacity, it still gives above average lift.

Montrose Minor will give a lift of 1½' to 2' above water level; the Montrose Major will give 3'/4' above water level with the twin diffuser stone Power Lift.

The Power Lift can be used in conjunction with the WINDMILL BIOLOGICAL FILTER to increase the rate of water turnover.

This is especially important for Marine Aquaria where the action of the WINDMILL BIOLOGICAL FILTER is far superior to any other type of filtration. It gives the maximum filtration over the whole area of the aquarium base without retaining any debris below the filter bed where collectively this cannot be attacked by the aerobic organisms.

All filtration systems having a gap under the filter bed defeat the main object of Biological Filtration.

The Biological Filter is not just a gimmick—it is a piece of scientific equipment that allows water-purifying bacteria to work at maximum capacity in your aquarium.

SINGLE POWER LIFT 95p

DOUBLE BOOSTER AIR LIFT £1.25

The biological filters are made for all sizes of aquaria

<table>
<thead>
<tr>
<th>Size of aquarium</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>16' long</td>
<td>78p</td>
</tr>
<tr>
<td>18'</td>
<td>78p</td>
</tr>
<tr>
<td>24'</td>
<td>93p</td>
</tr>
<tr>
<td>30'</td>
<td>93p</td>
</tr>
<tr>
<td>36'</td>
<td>£1.15</td>
</tr>
<tr>
<td>48'</td>
<td>£1.86</td>
</tr>
</tbody>
</table>

Any size filter made to order. Enquiries welcomed.

Manufacturers:
WINDMILL PRODUCTS

Factory: 29-33 COLLEGE ROAD, WOOLSTON, SOUTHAMPTON
Telephone: 0703-47330

Enquiries—Head Office: 244 VAUXHALL BRIDGE ROAD, VICTORIA, LONDON, S.W.1
Telephone: 01-834 4242

"I saw your advertisement in PFM"
H. TISBURY & SONS
SPICE PITTS FARM, CHURCH ROAD,
NOAK HILL, HAVERING, ESSEX
RM4 1LD
BREEDERS OF HIGH-CLASS FANCY GOLDFISH
A SELECTION OF ORNAMENTAL POND FISH AVAILABLE THIS MONTH
GOLDFISH SIZES 1½-8"  GOLDEN TENCH SIZES 2½-6"
COMET GOLDFISH  2½-8"  GREEN TENCH  2½-12"
BLUE SHUBUNKINS  2½-8"  MIRROR CARP  2½-6"
GOLDEN ORFE  2½-12"  HIGOI CARP  2½-6"
GOLDEN RUDD  2½-6"  KOI CARP  3½-18"
Lilies, marginal and oxygenating plants, a large range available all grown on the premises.
Pumps, pools, cascades and all pond equipment, butyl liners, standard sizes in stock.
Any size made to order.
We hope our new Tropical Fish House will be in operation this month.
ISO 2 ft and 3 ft tanks full of the usual and unusual in Tropical Fish and Plants.
Other varieties are available (Fish sent by rail please add £1 carriage)
SITUATED 5 MINUTES FROM GALLOWS CORNER ROUNDABOUT (A12)
By Public Transport: Train to Romford Station—then 174 bus to door
Visitors welcome
Enquiries: Please enclose stamped, addressed envelope
Opening hours, MONDAY-SATURDAY 9.30 a.m.-8 p.m. SUNDAY 10.00 a.m.-6 p.m.

WE SPECIALISE IN SERVICE
Have You Been To Our Shop Yet?
Home Bred Brown Discus NOW ONLY £1.50 EACH. Also Breeding Pairs.
Congratulations to Mr. Wakefield who is having great success with one of our pairs.
Also we have a complete range of coldwater fish, plants and equipment, including Japanese Koi, Shubunksin, Golden Orfe, Tench, Golden Rudd, Goldfish, etc.
Send for our price list of coldwater fish and equipment, or tropical fish and equipment.

TRIPPAS TROPICALS
152 Highfield Road
Hall Green
Birmingham B28 DHT
Telephone 021-777 5708

HOURS OF BUSINESS
Mon, Tues, Thurs, Fri, Sat to a.m. to 8 p.m.
Sunday to 4 p.m.
Closed all day Wednesday

Please mention PFM when writing to advertisers
Your fish will rise to POND PRIDE

Fish feed on the surface from this high protein, vitamin enriched, nutritionally balanced food in large pellet form.

With POND PRIDE you can watch your fish whilst they feed, note their feeding habits and even see small fry enthusiastically nibbling their way through the floating pellets.

Standard pack contains approximately 1,000 pellets — each pellet a single well balanced meal!

Obtainable in a range of containers from 28 to 3,000 grams (Mini Standard Maxi Breeders) from pet shops and garden suppliers everywhere. In case of difficulty write to:

COOPER NUTRITION PRODUCTS LTD
Speciality Division
Stepfield,
Witham Essex. CM8 3AB
Tel. Witham 3651

"I saw your advertisement in PFM"
Aquarama Tropics invite all traders to visit their new
wholesale warehouse, now open at 35 Leicester
Road, Salford 7, Lancs., on the A576.
2 minutes from M62, 3 minutes from
Manchester City Centre

We are the leading importers of Tropical fish, Marines and Plants in the North
West. We stock most makes of accessories, foods, equipment and books for
Aquatic Retailers.
Generous discounts for callers and bulk buyers.
New Marine Room and Coffee Bar. Daily van deliveries, free within 50 miles
radius. Rail deliveries to all parts of the U.K.
Write, phone or call 061-205 3357 and ask for weekly price list.

Business Hours: Mon., Tues., Wed., 9.30 a.m. – 7.00 p.m. Thurs., Fri., 9.30 a.m. – 9.00 p.m.
Sat., Closed All Day Sun., 10.00 a.m. – 4 p.m.

RETAIL SHOP: AQUARAMA TROPICALS
84 Heywood Street, Cheetham, Manchester M8 8TD Tel. 061-205 3357

VISIT....

GREENFINGERS
61 DARTMOUTH ROAD,
LONDON S.E.23 01-699 6666

Full Range of Garden Pools and Pool Fish,
including KOI CARP and ORANDAS.

300 ft of aquariums stocked with tropical
fish and plants. Rare varieties usually in
stock, such as Altum Angels, Red Discus,
Chalceus, Pimelodella etc. Full range
of equipment. All sizes of aquariums in
stock including all-glass. Special sizes made
to requirements—no extra charge.

Open 7 days a week till 7 p.m.
Except Sunday 2 p.m.

Neals Garden and
Pet Centre

Heathfield Road London SW18
Telephone 01-874 2037
Open 8:30 am-6 pm

All types of
FANCY COLDWATER
fish now in stock

PLUS—our usual tropical
fish and plant selection

Extensive parking facilities available in our
5 acre Nursery Showground and aviaries

Please mention PFM when writing to advertisers
From the A.A. (auto-aquarists) Book of the Road


Places of Interest
St. Mary’s Parish Church, 12th Century Norman, unique 200 ft wooden spire.

‘HOUSE OF FISHES’
77 High Street. 14th century building, originally Inn ‘Lord Nelson’—still has country pub atmosphere—original oak beams and roaring log fire on tape. Props. Roy &Gwen Skipper—very old. Many aquariums of rare fishes. No entrance charge. All exhibits are for sale.

Open 9 a.m. to 7 p.m. Closed Wednesday and Sunday.

HERE
in the depths of London’s countryside the wonderful new Algarde Biological Undergravel Filter was proven, the original filters are still hard at work belching out water and air with great gusto and providing a splendid demonstration—so much so that sales talk becomes superfluous.

HERE’S A PICTURE — AND HERE’S THE DOPE

All plastic construction and marine safe. Virtually unbreakable—portable! Stays where it is put—under the gravel. Comes complete with one air lift but providing for two. We recommend one air lift for freshwater use, two for marine. In our experience greatest turnover of water through the filter is obtained using the popular cylindrical air stones at the base of the air lift.

Sizes
11" x 23" at 99p and 20p post.
9" x 17" at 89p and 15p post.
Extra air lifts 30p each. Suitable airstone 5p.

If your local dealer does not have this filter yet, don’t worry he soon will have. In the meantime, if you can’t wait you can rely on a return of post service from the House of Fishes.

HOUSE OF FISHES, 77 High Street, Hemel Hempstead, Herts.
Phone: 0442-4723

Trade Enquiries to:
ALGARDE, 40la Ripple Road, Barking, Essex
Phone: 01-594 1899/2439

"I saw your advertisement in PFM"
HELLO!
I'm Your Friendly Neighbourhood
DATAM DEALER

If you need QUALITY AQUARIUM EQUIPMENT come and see me.
Look for this sign on my window →
It'll guarantee you a good deal.

McLynn's
FISH FOOD FOR TROPICAL & COLD WATER FISH

McLynn's
FORTIFIED DAPHNIA
THE BEST BOOK BY D. McINERNY
"ALL ABOUT TROPICAL FISH"
GET THEM FROM YOUR PET SHOP

McLYNN'S PET FOOD CO.
SQUIRRELS LEAP, WOODFIELD LANE,
ASHTEAD, SURREY phone: Ashford 72009

MARSHALLS AQUARIA
26 Westbury Lane, Buckhurst Hill,
Essex. Tel: 01-504 4708

A large selection of quality tropical and coldwater fish, plants and equipment.
NOW stocking reptiles and amphibians. Also foreign birds, budgies, canaries, etc.

Open 6 days a week ★ 10.00 a.m.-6.00 p.m.
CLOSED ALL DAY TUESDAY
Starting May 1st ★ 12 noon-8.00 p.m.
(Sat. & Sun. 10.00 a.m.-6.00 p.m.)

Please mention PFM when writing to advertisers
HAVE YOU VISITED
LOAMPIT PET STORES YET?

If your interests include:

TROPICAL FISH
Such as local bred Baby Blue Discus and
Carl Nata Strain Baby Golden Angels as
well as a few rare species

REPTILES and AMPHIBIANS
We have in stock the jewel-like Day
Geckos, Arrow Poison Frogs and King
Snakes

CAGE BIRDS
Gouldian Finches, Blue Streaked Lories,
Waxbill Species and Softbills

SMALL MAMMALS
Chipmunks, Edible Dormice and Mon-
keys

THE BEST food lines and accessories: Cages, Aquariums,
Vivariums. We also specialise in White-
worm

INTERESTED? Then our address is
LOAMPIT PET STORES (Est. 1939)
126 Loampit Vale
Lewisham, London SE13
Tel. 01-692 4151

FOR THE DISCERNING HOBBIST—A WARM WELCOME

VISIT one of EAST ANGLIA'S
more progressive pet stores

Lynn Pets and Aquaria
41 ST JAMES' STREET, KING'S LYNN
Tel. 63115

Fish in stock at press
time included—DISCUS
—Brown, Blue-faced,
Heckel; KILLIES—Aust-
ralia, Mias, Ganders,
Playfair, Chrysochus;
OSCARs—Red, Tiger,
Red Tiger, Marble;
Piranha—Brandtii,
Nattereri.

PLUS
freshwater shrimps and
turries, wall lizards,
plated lizards, spotted
lizards, geckos.

Stop Press:
"ERNIE" is now at the University of East Anglia

SUBSCRIPTION ORDER
To
PetFish Monthly
554 Garratt Lane
London, S.W.17

Please send me PetFish Monthly
each month for
6 months (£1.05)
12 months (£2.10)
($6.00 for 12 months for USA and Canada)

starting with the issue (subscriptions can run from any
month's issue for six or for twelve issues). Cash/Cheque/P.O. enclosed.

Name
Address

Please mention PFM when writing to advertisers
50,000 Tropical Fish
10,000 Tropical Plants
sold each week to the Trade
at the most competitive prices. Send
for our weekly Wholesale Price List
comprising of Quality, Quantity and
Variety. Orders despatched immediately
by Rail morning and evening. Free London
delivery. Hours: Monday to Friday 9 a.m.
to 6 p.m. Closed Saturday.

Address: 26 The Village,
Charlton, London, SE7 8UD
Telephone: 01-856 9663
01-856 6090

"I saw your advertisement in PFM"
**PROOPS UNDERGRAVEL Aquarium Filter**

Ensures CRYSTAL CLEAR water. Filter action draws waste into gravel where it is converted into harmless mineral salts.

**Recommended Retail Price**

**75p**

Complete with full instructions.

- Provides continuous filtration in all popular sizes of home aquaria.
- Operate with any standard air pump.
- Easily installed.
- Nominal aquarium floor coverage 20 in. x 9 in.
- Efficiency of radiating tube design makes it suitable for use in even large tanks.
- Tubes easily cut to size to fit smaller tanks.

**PROOPS BROTHERS LIMITED**

The Hyde Industrial Estate,
Edgware Road, Hendon, London, NW9 5JS.
Tel: 01-208 8006

---

**MURKY GARDEN POND?**

**CLOUDY AQUARIUM?**

**DIRTY GOLD FISH BOWL?**

**WHITE SPOT TROUBLE?**

Bioquatic Laboratories produce a unique range of quality aquatic products which effectively deal with these problems. If unobtainable in your area write direct and include 5p for post and packaging.

**ACUREL® E** will keep the water CLEAR in your garden pond. 2 oz. to treat approx. 500 gals. Retail 43p. 4 oz. to treat approx. 1000 gals. Retail 70p.

**ACUREL® F** will keep your aquarium CRYSTAL CLEAR and improve filter efficiency by over 500%. Retail 43p.

**ACUREL® GOLD** will keep your goldfish bowl CLEAN for many weeks without having to repeatedly change the water. Retail 25p.

**ACUREL® Q** is a well-established, reliable cure for WHITE SPOT fungus and algae. Use it regularly as a disinfectant and preventive. In capsule form for accurate easy to administer dosages. Retail 34p.

**ACUREL® products** are chemically pure and if used as directed will not harm your fish, plants and live foods etc.

**TRADE ENQUIRIES TO:**

Bioquatic Laboratories
161 Rustlings Road.
SHEFFIELD S11 7AD

---

**ATTENTION**

**LARGE STOCKS OF**

**KOI CARP**

at

**EARLSWOOD WATER GARDENS**

165 WOOD LANE, EARLSWOOD,
SOLIHULL, WARKS.
Tel: EARLSWOOD 2586

---

**BOURNE END AQUARIUM**

24, Furlong Road,
Bourne End, Bucks.

TROPICAL AND COLDWATER FISH
LARGE SELECTION OF EQUIPMENT
& PLANTS  LIVE TUBIFEX

Open until 5:30 daily
Late night Thursday 7-9,
Sundays 11-1 and 3-5.
Closed all day Wednesday.

Please mention PFM when writing to advertisers
QUEENSBOROUGH
111 Goldhawk Road Shepherds Bush London W12
Tel. 01-743 2730
Opening hours MON., TUES., WEDS., SAT. 9.00 a.m. to 5.30 p.m.
CLOSED all Day THURSDAY
FRIDAYS Late Night Opening (until 7.00 p.m.)

WE ARE NOT A PET SHOp—FISH ONLY
EVERYTHING FOR THE NEW—AND EXPERIENCED—AQUARIIST

Club visits still welcome on Sundays and Thursdays—3 weeks
notice please • Current count of varieties—when going
to Press—243 varieties

Unusual varieties:

<table>
<thead>
<tr>
<th>Aphyosemion australis</th>
<th>Clown loach</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot; &quot; gold</td>
<td>Batrachobrycon</td>
</tr>
<tr>
<td>&quot; &quot; christyi</td>
<td>Mosquito</td>
</tr>
<tr>
<td>&quot; &quot; gardneri</td>
<td>Girardinus metallicus</td>
</tr>
<tr>
<td>&quot; &quot; gugleri</td>
<td>Fasio cichlid</td>
</tr>
<tr>
<td>&quot; &quot; guilar</td>
<td>Pelmatobromius tenuilatus</td>
</tr>
<tr>
<td>&quot; &quot; filamentosum</td>
<td>Pinelodella species</td>
</tr>
<tr>
<td>&quot; &quot; walkeri</td>
<td>Large silver sharks</td>
</tr>
<tr>
<td>&quot; &quot; Cynolebias nigripinnis</td>
<td>Rainbow shark</td>
</tr>
<tr>
<td>&quot; &quot; whitel</td>
<td>Kallmaus—true flying fox</td>
</tr>
<tr>
<td>Aplocheilus boschii</td>
<td>Piranha</td>
</tr>
<tr>
<td>&quot; &quot; lineatus</td>
<td>Flounders</td>
</tr>
<tr>
<td>&quot; &quot; playfairy</td>
<td>Whiptails</td>
</tr>
<tr>
<td>Bristolethys ciliata</td>
<td>Barbus dorsalis</td>
</tr>
<tr>
<td>&quot; &quot; urophthalmus</td>
<td>Cyclochilichthys apogon (barb)</td>
</tr>
<tr>
<td>&quot; &quot; Haplochromis burtoni</td>
<td>New metallic barb</td>
</tr>
<tr>
<td>&quot; &quot; Labeocephalus fuelleborni</td>
<td>Filamentosus barb</td>
</tr>
<tr>
<td>&quot; &quot; trevallyesae</td>
<td>Arilus barb</td>
</tr>
<tr>
<td>&quot; &quot; Melanochromis melanosynus</td>
<td>Tyre track eels</td>
</tr>
<tr>
<td>&quot; &quot; &quot; vermivorous</td>
<td>Congo tetra</td>
</tr>
<tr>
<td>&quot; &quot; Pseudotropheus auratus</td>
<td>Prochilodus insignis</td>
</tr>
<tr>
<td>&quot; &quot; elongatus</td>
<td>Pink tailed chalice</td>
</tr>
<tr>
<td>&quot; &quot; microstoma</td>
<td>Black phantom tetra</td>
</tr>
<tr>
<td>&quot; &quot; zebre</td>
<td>Celebes rainbow</td>
</tr>
<tr>
<td>&quot; &quot; Discus—brown, blue, red</td>
<td>Rummy nose tetra</td>
</tr>
<tr>
<td>Chocolate gourami</td>
<td>Fire eels</td>
</tr>
<tr>
<td>Sparkling gourami</td>
<td>Snakeheads (micropsilis)</td>
</tr>
<tr>
<td>Croaking gourami</td>
<td>Texas cichlid</td>
</tr>
<tr>
<td>Madagascar Rainbow</td>
<td>Tilapia mariae</td>
</tr>
<tr>
<td>Salmon discus</td>
<td>Tilapia tholloni</td>
</tr>
<tr>
<td>Apistogramma ramirezi XL</td>
<td>Banded hemiodus</td>
</tr>
<tr>
<td>Severum cichlid</td>
<td>Mottis</td>
</tr>
<tr>
<td>Silver half back (New)</td>
<td>Asian garr</td>
</tr>
</tbody>
</table>

We specialise in Plants—Cryptocoryne aponogeton—balansae—blassi, etc.

"I saw your advertisement in PFM"
CHELTENHAM AQUATICS

AQUATIC PLANT SPECIALISTS. GROWERS AND IMPORTERS FROM FOUR CONTINENTS.
OVER 60 SPECIES IN STOCK FOR TROPICAL AND COLDWATER AQUARIUM.

<table>
<thead>
<tr>
<th>Bunch Plants</th>
<th>per five</th>
<th>Water Gardening catalogue, Postage 5p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulia</td>
<td>25p</td>
<td></td>
</tr>
<tr>
<td>New Giant Amboila</td>
<td>40p</td>
<td></td>
</tr>
<tr>
<td>Bacopa small</td>
<td>30p</td>
<td></td>
</tr>
<tr>
<td>Bacopa large</td>
<td>20p</td>
<td></td>
</tr>
<tr>
<td>Cabomba Green</td>
<td>15p</td>
<td></td>
</tr>
<tr>
<td>Cabomba Red</td>
<td>35p</td>
<td></td>
</tr>
<tr>
<td>Alternanthera</td>
<td>40p</td>
<td></td>
</tr>
<tr>
<td>Elodea densa</td>
<td>17½p</td>
<td></td>
</tr>
<tr>
<td>Hygrophila</td>
<td>30p</td>
<td></td>
</tr>
<tr>
<td>Ludwigia</td>
<td>20p</td>
<td></td>
</tr>
<tr>
<td>Myriophyllum</td>
<td>30p</td>
<td></td>
</tr>
<tr>
<td>Giant Hygrophila</td>
<td>60p</td>
<td></td>
</tr>
<tr>
<td>Giant Red Hygrophila</td>
<td>40p</td>
<td></td>
</tr>
<tr>
<td>Saginaria natans</td>
<td>20p</td>
<td></td>
</tr>
<tr>
<td>Sagitaria gigantea</td>
<td>60p</td>
<td></td>
</tr>
<tr>
<td>Tropical Hornwort</td>
<td>20p</td>
<td></td>
</tr>
<tr>
<td>Water Wistaria</td>
<td>60p</td>
<td></td>
</tr>
<tr>
<td>Vallaniera</td>
<td>20p</td>
<td></td>
</tr>
<tr>
<td>Straight</td>
<td>20p</td>
<td></td>
</tr>
<tr>
<td>Twisted</td>
<td>20p</td>
<td></td>
</tr>
<tr>
<td>Tortifolia</td>
<td>40p</td>
<td></td>
</tr>
<tr>
<td>Utricularia</td>
<td>20p</td>
<td></td>
</tr>
<tr>
<td>Floating Plants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water lettuce</td>
<td>10p</td>
<td></td>
</tr>
<tr>
<td>Salvinia</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Amazon Frogbit</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Specimen Plants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amazon Sodus</td>
<td>22½p</td>
<td></td>
</tr>
<tr>
<td>Ruffled Sods</td>
<td>25p</td>
<td></td>
</tr>
<tr>
<td>Variegated Rush</td>
<td>22½p</td>
<td></td>
</tr>
<tr>
<td>Aponogeton</td>
<td>17½p</td>
<td></td>
</tr>
<tr>
<td>Rigidifolius</td>
<td>17½p</td>
<td></td>
</tr>
<tr>
<td>Crinosus 12½p &amp; 17½p</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undulatus</td>
<td>12½p &amp; 17½p</td>
<td></td>
</tr>
<tr>
<td>Barleya species</td>
<td>60p</td>
<td></td>
</tr>
<tr>
<td>Indian Fern</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Cryptocoryne</td>
<td></td>
<td></td>
</tr>
<tr>
<td>balnanae</td>
<td>12½p &amp; 17½p</td>
<td></td>
</tr>
<tr>
<td>blatojus</td>
<td>60p</td>
<td></td>
</tr>
<tr>
<td>sriffichii</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>ciliata</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Dwarf Plants</td>
<td>per each</td>
<td></td>
</tr>
<tr>
<td>Dwarf Rush</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Cryptocoryne</td>
<td></td>
<td></td>
</tr>
<tr>
<td>nurra</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>minima</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>williwilli</td>
<td>17½p</td>
<td></td>
</tr>
<tr>
<td>wendtii</td>
<td>17½p</td>
<td></td>
</tr>
<tr>
<td>beckettii</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>afficinnia</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Hairgrass</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Pygmy Swords</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Radicans Swords</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Borneo Swords</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Malay Swords</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Borneo Fern</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Nipa Palma</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Blyxa japonica</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Wheat Plant</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Spatterdock Fern</td>
<td>30p</td>
<td></td>
</tr>
<tr>
<td>Umbrella Fern</td>
<td>12½p</td>
<td></td>
</tr>
<tr>
<td>Nymphae Stellata</td>
<td>12½p</td>
<td></td>
</tr>
</tbody>
</table>

Complete plant collections from above:
For 18 in. Aquarium £1.35
For 24 in. Aquarium £2.32
For 30 in. Aquarium £2.70
For 36 in. Aquarium £3.85

Special Cryptocorynes
Selection: 5 Cryptocorynes all different £6p
10 Cryptocorynes £1.20

Fish House Collection
A huge variety of plants at special discounts for the larger user £5

Lead wire for weighting plants 5p per yard
Plant fertilizer tablets 27p per bottle

Cash with order. Minimum order 50p. Carriage and Packing 12½p Trade Supplies list on application.

Cheltenham Aquatics 40 High Street Cheltenham Glos Tel Chelt 24949

PLANTS

OUR RETAIL SECTION is Now Open to the Public

NOW IN STOCK –
Various Labeos and other popular Thai species. Also Long Nosed Elephant and Butterfly Fish, various Pelmatochromis and 22 other African specimens.

WORLD WIDE EXPORT

SEND S.A.E. FOR PRICE LIST

ONLY BONA FIDE TRADERS' ENQUIRIES REQUESTED

DUDDEN HILL NURSERY

AQUATICS & AVIARIES LTD

DUDDEN HILL LANE LONDON NW10 1DD

01-450 5977, 450 5705, 450 5041

Please mention PFM when writing to advertisers
"My pool came in this carton"

POOL LINERS
Materials in stock
FLEXILENE  
BUTYL  
JURALENE  
POLYTHENE  
LAKE FLEX

Pumps, fountain ornaments, glass-fibre pools, water lilies, fish, aquatic plants—in fact everything you need to make a perfect water garden.

SPECIAL  
KOI CARP  
ALL SIZES

THE SURBITON AQUARIAS  
Established 21 years  
Box 15  
27-29 Brighton Road  
Sutton, Surrey  
Phone 01-399 6783  Open 9-3.30  
Closed Sundays and half day Wednesday

THE TROPICAL FISH FOOD WITH 12 NOURISHING INGREDIENTS

VIT-A-MIN

King British VIT-A-MIN contains
- Mosquito larvae  
- Liver  
- Shrimp meal  
- Soya meal  
- Algae  
- Crustacea  
- Tubifex  
- Fish meal  
- Crustacea

EVERYTHING NECESSARY TO KEEP YOUR FISH IN SPARKLING HEALTH

IN 5 POPULAR SIZES

<table>
<thead>
<tr>
<th>Size</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMALL</td>
<td>12 grams</td>
<td>12p</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>26 grams</td>
<td>20p</td>
</tr>
<tr>
<td>ECONOMY</td>
<td>2 oz.</td>
<td>37p</td>
</tr>
<tr>
<td>BREEDER</td>
<td>1 lb.</td>
<td>2.15</td>
</tr>
<tr>
<td>JUMBO</td>
<td>2 lb.</td>
<td>4.30</td>
</tr>
</tbody>
</table>

King British AQUARIUM ACCESSORIES LTD

"I saw your advertisement in PFM"
Tropical Fish as a hobby

a guide to selection, care, and breeding

Herbert R. Axelrod

"Just about tells us all we wish to know about tropical fish, and in addition to being an excellent comprehensive guide to the newcomer to the hobby, it should find a place on every aquarist's bookshelf as a valuable book of reference."

Pet Store and Aquatic Trader

A NEW AND REVISED EDITION — ILLUSTRATED THROUGHOUT £3.25

ORDER FORM

(To Bookseller) copies of
Tropical Fish as a Hobby I enclose £3.40 (inc. p & p) per copy.
Name
Address

GEORGE ALLEN & UNWIN

IMAGINE AN AQUARIUM—

— that is glazed with conventional sheet glass,
— has light, but strong, inert plastics frame and base,
— comes complete with neat moulded cover,
— nothing unusual so far, but let's go on —
— can have any glass panel replaced in seconds (even if you have five thumbs on each hand) without disturbing adjacent panels,
— uses no glazing compound to render it watertight,
— has an exceptionally neat lighting arrangement.

A new concept in aquarium design? Certainly not . . . this product has been tried and trusted by European aquarists.

Available in three sizes from all progressive dealers, and called . . .

NEPTUNUS

SOLE AGENTS—UNITED KINGDOM

LEE REID & CO. (London) LTD.

BEAUMONT ROAD, BANBURY, OXON

Tel. BANBURY (0295) 2429

LONDON OFFICE

Tel. 01-485 3068

(Ansafone 24 hour service)

TRADERS WELCOME — STAND 32 HARRIOT SHOW

Please mention PFM when writing to advertisers
TACHBROOK TROPICALS LTD.
244 VAUXHALL BRIDGE ROAD LONDON S.W.1
Telephone 01-434 5179

for MIRACLES

MIRACLE AQUATIC PRODUCTS THAT IS!
Quality Products such as: Miracle Freeze-dried Daphnia, etc. Miracle Freeze-dried Mosquito Larvae, Miracle Freeze-dried Brine Shrimp, and Tubifex

PLUS the NEW MIRACLES

FRY TREET PUFFER PACK (fine grade Tubifex for fry of all types)
Also the new Miracle ‘stick-on’ tablet foods
TUBI-TABS (30 Tabs containing Tubifex) and TABBIES (30 Tabs containing Brine Shrimp)
Both these at only 20p per 9 gm. tube

Come and see the vast range of TFH Books at Tachbrook’s
Browse around—
Hard cover books, soft cover books. Books on every aspect of aquarium keeping—books for beginners, books for specialists—books to suit all pockets

NOW AVAILABLE

RASBORAS
By Dr. Martin and R. Brittan £4.30

BREEDING AQUARIUM FISHES
no. 2
By H. Axelrod £4.30

These and dozens more are all at Tachbrook of Victoria
244 VAUXHALL BRIDGE ROAD VICTORIA, LONDON, S.W.1

“I saw your advertisement in PFM“
1972 POND SEASON

Our Extensive Gardens open April 1st.
and are open on Easter Monday.

We have an exceptional selection of NISHIKI KOI
that have wintered in our ponds.
3 - 4" £1.00 - £3.00 each. 4 - 5" £1.50 - £5.00 each. 6 - 8" £5 - £10.00 each.
IN A FANTASTIC VARIETY OF COLOURS.

<table>
<thead>
<tr>
<th>GOLDFISH</th>
<th>RED FANTAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>From 15p - £1.50</td>
<td>25p</td>
</tr>
<tr>
<td>LONG TAIL COMETS</td>
<td>CALICO FANTAILS</td>
</tr>
<tr>
<td>15p</td>
<td>25p</td>
</tr>
<tr>
<td>COMET TAILED SHUBUNKINS</td>
<td>GOLDEN ORFE</td>
</tr>
<tr>
<td>15p</td>
<td>2-3&quot; 15p. 10 for £1.15p.</td>
</tr>
</tbody>
</table>

Colin Roe's

SMALL PELLETS
Price 50p per bag

LARGE PELLETS
Price 50p per bag (weight not less than 1 lb.) post paid

Koi

THE AUTHORITATIVE BOOK ON
THE FASCINATING JAPANESE RAINBOW CARP
By Colin D. Roe & Anthony Evans
Profusely illustrated in colour
Price 65p + 5p postage

AND FOR THE POOL SIDE
GIANT GUNNERA MANICATA pot grown £2.00 each.
By post 50p extra.

Please note—All enquiries requiring a reply MUST be accompanied by S.A.E. Our premises are situated on the main Stratford-Birmingham road, 9 miles from Birmingham, Midland “Red” Bus No. 150 from Bus Station, Birmingham, pass the door, slight as “The Crown,” Monkspath.

Closed all day Sunday and Monday

Hours of business—November-March 10 a.m.-5 p.m. April-October 10 a.m.-6 p.m.

Terms of business—Cash with order please. Fish sent by rail. Tropical minimum order £1.50, insulated container and carriage £1.50. Coldwater minimum order £3 plus £1.25 carriage. Please by post (minimum order £0.50) please add 50p post and packing.

Printed by Adlard and Son Ltd., Bartholomew Press, Dorking.