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● Electrical safety

**Time for Reappraisal?**

SHOULD an aquarium or its electrical equipment be earthed? This is a perennial query, one that we are often asked, and although the importance of the matter is all too apparent, to give an unqualified answer is practically impossible.

We have always endeavored to answer such enquiries in the light of the particular circumstances and not with a general statement. Indeed, probably the only 100% safe statement that can be made about this is a kind of directive modelled on the one to be found printed on the backs of television sets—that under no circumstances should work be done on the aquarium whilst it is connected to the mains. But to add to this a warning that the aquarium exterior under similar conditions should never be touched would obviously be of very little practical value. To earth an aquarium does not make the warning about the dangers of working on a switched-on tank superfluous. In fact to earth a tank that is in an 'earth-free' situation, for example on a dry, carpeted wooden floor, could make a major hazardous incident out of a minor one if there were heater breakage, wire baring and so on. The difficulty of defining the earth-free situation arises here, however, and it is true that in the modern home with central heating and numerous (earthed) electrical appliances it is highly likely that an aquarium might be placed where human contact with both it and an earthed area could be made.

It is easy to point to a long period of safe usage of aquarium electrical equipment as evidence in support of leaving well alone. But is, in fact, all well? It is not entirely clear what makes an electric shock from domestic supply a killer in some circumstances and for some individuals and not for others. Although, regretfully enough, 'live' tanks are not uncommon in poorly maintained collections of aquariums, we know of only one recorded fatality attributed to a 'live' aquarium and that one not in this country. No one wants to become a statistic of this type, however, and users of aquarium electrical equipment have a right to be told if there are safety measures they should be taking. What is more, if there are measures that ought to be applied, ideally these should be built into equipment and not be do-it-yourself additions.

We have just recently had to look at these matters very carefully in connection with public exhibitions of aquariums. There is (rightly) stringent control of usage of electrical equipment that can be in reach of the public, enforced by inspection in London exhibition halls (but not apparently with much diligence elsewhere in England), and one inspector has given a most unfavourable report on the safety of metal aquarium hoods housing electric lamps and of glass-lined electrical apparatus. If people whose job it is to know about electrical safety can question the equipment widely used by aquarists it is thought by this magazine to be a duty to give voice to the doubts and to ask whether electrical safety in our hobby is being given the consideration it demands.

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**A Merry Christmas and Happy Fishkeeping in 1972 to all Readers of PFM**
Your comments and views on all topics of interest to aquarists are welcomed. Address letters to PFM Letters, 554 Garratt Lane, London S.W.17

National Show Rules are Urgently Needed

It is gratifying to see that my remarks (PFM, September) on being pleased to receive comments on MAAS open shows have been noted and acted upon. I thank Mr Kerridge for taking the time to write. As I did not attend the show in question it has been necessary to seek the comments of the persons concerned with the show, in an effort to clarify the points raised in the latter. The show Mr Kerridge visited does not represent the average presentation of an open show in the Midlands. Some of the shows are extremely well organised, whilst others need improvement.

All affiliated societies operate using MAAS Recommended Show Rules. These rules allow some flexibility, but in this case seem to have been stretched to breaking point. MAAS Recommended Rules recommend that halls shall be vacated while judging takes place. As no alternative arrangements were made for visitors and exhibitors at the show in question, the show secretary allowed the hall to be used though judging was in progress. The decision to do so was obviously in error, but cannot wholly be blamed upon the show secretary as the rules in use at the moment are purely recommendations.

There is also a recommended rule that a minimum of four judges shall be used at an open show. There were four judges assigned to this show. Two arrived safely but the other two judges travelling from Birmingham had the misfortune to have a mechanical breakdown on the motorway (extensive damage to the gearbox of the car in which they were travelling). This was unforeseen and unfortunate. The judges already at the show began judging in the mistaken belief that they were to be supported by other judges. When it became apparent that no help was arriving they did the obvious—they discussed the position they were in and came to the conclusion that they should continue judging. But, in order to keep to some sort of time schedule, it was necessary to adopt the ‘gate method’ of judging whereby the judge fully points the first five or six places. It is to be hoped that any judge faced with a similar predicament would follow a like course.

Each MAAS judge is an experienced aquarist with a keen knowledge of fishes and fish behaviour. If any exhibit on the show bench requires moving,

for any reason at all, in the opinion of the judge, then he is at liberty to move it. The prime factor in judging is to be able to see the exhibit clearly. It is not enough to be able to see only one side of an exhibit. There could be an occasion when an exhibit is given a card when it has only one eye, or a severe injury, because the judge has been unable to judge both sides of the fish. As a judge once remarked to me: ‘When a fish can turn round on word of command I’ll say there is no reason to move an exhibit.’ Of course, this does not give the judge licence to move fishes willy-nilly. Suffice it to say that a judge will use discretion.

This brings me to the questions asked by Mr Kerridge:

1. Why cannot halls be closed whilst judging is in progress? Until 31st December 1971, affiliated societies will be using the set of Recommended Show Rules previously mentioned. As these rules are merely recommendations there is little that can be done to force a change of policy in the societies choosing to ignore them. This condition has been apparent for some time and, in an effort to get improvement and conformity, there comes into force as from 1st January 1972 a new set of Open and Club Table Show Rules. These rules will be applied to the letter. There will be no reason why open shows should not be run in an orderly, agreeable manner. Judges will have the power to withdraw their services if a show is not conducted in accordance with the rules.

2. Why should judges pick up show jars?

As I have said previously, the essential part of judging is to be able to see all sides of a fish clearly. If an exhibit is stationary during judging, how is a judge to point the side he cannot see? MAAS judges reserve the right to move exhibits when necessary. The occasions when jars are moved are few and far between. Any disturbance is then taken into account.

3. Why are judging sheets not on view to the public?

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when judging took place. It is in no way gives reasons, therefore it is of little, or no value after judging has taken place. All MAAS judges agree that by far the better method is to have the exhibitor approach the show secretary about any point of judging, so that the secretary can decide if the inquirer can best be served with a discussion with the judge. At all MAAS open shows the judging sheets are available for scrutiny, on request, from the show secretary, and judges remain at the show to answer queries.

I do hope that some light has been shed on the methods employed by MAAS. We are not without fault, but constant vigil and criticism keeps us attentive to our failings and leads to improvement. Not until there is established a set of National Show Rules can there be hope of uniformity. Why no National Show Rules are available is beyond me. Are we not all talking about the same subject?

Thank you again, Mr Kerridge. Your observations are much valued.

R. ROBERTS
Secretary, Midland Association of Aquarists Societies

THE letter from Mr Kerridge of Harlow (p.54, November) was certainly an eye-opener, and an unpleasant one at that. It makes it evident that the failure of the negotiations between MAAS and the FBAS to help make the FBAS Show Rules nationwide was something approaching a tragedy. The FBAS rules rigidly exclude everyone except the show secretary from the showing area, and rightly. Furthermore, and most important, every fish is judged, and fairly judged. Where there are aquascapes and furnished aquaria, these too are judged in the same way. The judging sheets are shown where everybody can read them.

All this makes me proud to be a member of the FBAS and rather thankful to reside in an area where the competitive showing is governed by a body of such integrity. I don’t do much showing, but what I do I like to feel comfortable about.

Being the delegate of Ealing & D. A.S. to the FBAS quarterly assemblies for this year, I have some idea of the thousands of man-hours involved in evolving the show rules as they stand at present, and it is nice to realize that the spare-time activities of our committees and officers have not been in vain.

Our fancy badly needs a set of nationwide rules.

I call upon the officers of all the organisations concerned to get together and try again—not for my benefit, but for everyone else’s. Please!

London W13 9EL
LAURENCE SANDFIELD

Success with Sunfish

CONGRATULATIONS to our good friend Roger Whittington on his achievement in rearing the Lepomis gibbosus. As stated in PFM (November), I did have near success last year. This year I am pleased to report that I have had complete success and also have bred and reared a number of youngsters. This was confirmed by my entry in breeders class W in this year’s South Park Aquatic Study Society open show. I have now acquired specimens of Lepomis megalotis (long-eared bass) and Lepomis microlophus (red-eared sunfish) which I am planning to work with.

Wimbledon, S.W.19
R. RUDLEY
South Park Aquatic (Study) Society

Inter-Society Support

WE are not a ‘Big Society’ but when Horsforth Aquarium Society had its inter-club show on 4th October we invited 12 other societies to join us with a message reading ‘Please inform the secretary how many members will be attending our Show so that catering arrangements can be made.’

Right! The night arrived, with a good attendance from one society and a showing of members from two others. These three had the right attitude and let H.A.S. know they were coming and how many were involved. But the other nine societies hadn’t the decency to let us know if they were coming or not; so food was catered for them just in case they turned up—they didn’t come and food and money were just wasted.

What has the H.A.S. done to deserve this kind of treatment from those nine societies, or are we one of many societies who receive this kind of treatment? It would be interesting to know.

MRS J. MORGAN
Social secretary, Horsforth A.S.

Villains in Communities

I HOPE I may be forgiven for arguing with Jim Kelly on the subject but I do feel that his comments regarding tiger barbs in Transatlantic Topics (PFM, September) are misleading to the average aquarist. We occasionally get someone writing to us, worried because their angel fish or other long-finned fish have ragged fins. We can almost always trace the trouble back to either tiger barbs or other fish such as black widows. I hate
to think of the distress caused to other fish by these two species alone, which is all a pity because they are two of my favourite fish.

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**Jim Kelly replies:**

I don’t disagree that tiger barbs can be bullies but in my own experience I have found this so only when they were kept isolated or without a member of the opposite sex. I had previously stated this on p. 160 of my book *The Aquarium Guide*. I seemed to be alone in the feeling and it was refreshing when I found a contemporary American aquarist agreeing with me, hence my comments in *Transatlantic Topics*. I well remember experiencing quite a lot of fin nipping in a community tank I owned many years ago. I removed the tiger barbs but still the fin nipping persisted. Finally the bully was traced—a solitary zebra fish! I kept quiet about it because, really, who would have believed that?

**Running a Fish House**

**WITH** regard to the article by F. W. Coles—"A Plea for the Fish House Owner" (PFTM, November)—we have been keeping and breeding fish for 8 years and I cannot agree with what he says. For a start, anyone who heats a fish house with tank heaters in every tank hasn’t started correctly. If you want to make it pay, you must use space heating, with the fish house well insulated. We heated a fish house, 18 ft. by 10 ft., tank temperature 75-80°F, for less than £2 a week. We used electric fan heaters on a thermostat. For air we used Rena Super—even now we use three Esha 400 at a cost of £4.45 each. We don’t use filters in the fish house at all.

The growing tanks are well planted so we had to sell plants and fish in large quantities. I talk in the past as we used to breed about 1000 fish a week at one time—when I say breed I mean raised and sold. Now we are dealers in the aquatic trade and haven’t time to breed in great quantities, but I wish I could get someone to turn fish out and supply me. Not just with the ones left after they have supplied all their friends, but in quantity, quality and true to type—on a contract, just as we used to supply our dealers (with 1700 fish per week at 70 each—old price).

As for foods, if you want fish to grow you must feed them and it’s not cheap. If you want fish to grow fast you must use the best. We used to use, and still do, brine shrimp, flake foods, white worm, daphnia, eggs, spinach, garden peas, rose and ox heart.

We used to sell tiger, nigger, chequers, rosys, cherries and schuberti barbs, also zebras at 7 weeks old. Livebearers—black, red-eyed reds, tuxedos, red and green swords, platys and guppies—at 10 weeks old; and we made a profit to help us start our business.

If Mr F. W. Coles is interested in supplying me with fish on a contract, 50 good fish a week or more, I will pay him £2 a fish more than I can buy from a wholesaler. I don’t mean exotic fish—just ordinary platys, swords, barbs etc. Please get in touch, or anyone else who is interested in supplying us.

We still have our fish house, which we now use for growing on English-grown plants and for quarantining our fish before they go into the shop.

**R. TRIPPS**

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**Meetings and Changes of Officers**

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**Bracknell A.S.** President, Mr and Mrs K. Roberts; chairman, Mr E. Johnson; vice-chairman, Mr M. Carter; treasurer, Mr R. Phillips; secretary, Mr B. Cowan (27 Bowood Close, Bracknell); show secretary, Mr L. Jordan (4 Fernbank Place, Aveon, Beds; telephone Windfield 3462).

**Clapham A.S.** Chairman, Mr S. Fagan; secretary, Mr S. Fagan (26 Backwood Road, London, SW17); telephone: 01-772 7263; treasurer, Mr W. Wright; show secretary, Mr H. Burnham; meetings: every other Tuesday at 8 p.m.; catch day: every Saturday at 8 a.m.; address: Southfield Methodist Hall, Friends House, Wandsworth Road, London, SW11.

**East London A. & P.A.** President, Mr P. Canavan; vice-presidents, Mr F. Arnold, Mr A. Field, Mr J. Breen, Mr F. Porto, Mr R. Taylor; chairman, Mr M. Purcell; vice-chairman, Mr C. Green; treasurer, Mr H. Harris; show organiser, Mr J. Bond; editor, Mr R. Wright; secretary, Mrs P. Harris (20 Leigh Road, East Ham, London, E6); show secretary, Mr F. Tucker; P.R.O., Mr B. Dodds.

**Fancy Guppy Association, Edmondston Section.** Meetings: first Sunday in every month, Four Hills Hall, Royal Hill, Edmondston, Secretary, Mr D. Phillips (40, Whalley Way, Edmondston, London N16 1BN; telephone 01-626 3418).

**Hounslow & D. A.S.** New venue: St Stephen’s Church Hall, Whitton Road, Hounslow, Middlesex; meetings: alternate Wednesdays, 8 p.m.; Secretary, Mr D. J. Wootton (14, Unbridge Road, Harrow; telephone 886 2342).

**Knowle & D. A.S. of Bristol.** New Secretary. Meetings: Second and fourth Tuesday of month, 7.15 p.m.; Knowle Park Congregational Church Hall, Road, Welsh bible, Knowle, Bristol. Secretary, Mr D. Watford (13 Stoneleigh Walk, Knowle, Bristol 4).

**NORTH STAFFS.** A.S. Secretary, Mr A. C. Ford, 3 Cloake Road, Walsall, Staffordshire; show secretary, Mr C. Edmunds.

**Nottingham & D. A.S.** New chairman, Mr C. Hall; meetings: Flat 4, Parkside Hotel, Marshall Road, Shrewsbury, Nottingham, Tuesdays, 7.45 p.m.

**Swallington A.S.** President, Mr G. Bird; vice-president, Mr P. Richards; secretary, Mr P. D. Flint (21 Caris Moor Drive, Leeds 17, Yorkshire); show secretary, Mr R. Stening; New venue: meetups now held on the first and third Tuesday of each month, 7.45 p.m., John Shenshaw School, Barnsley Road, Leeds 17.

**Yeovil & D. A.S.** President, Mr S. Longdon; chairman, Mr F. Lane; vice-chairman, Mr A. Nicholls; secretary, Mr C. Bushell (24 Mayfield Road, Yeovil, Somerset); treasurer, Mr M. Hull; show secretary, Mr E. Wright.
The Mbuna 4

Spawning of the Malawis

A pair of Labeotropheus fuelleborni in the characteristic "T-position", described by the author, during the pre-spawning. The pair are in the hollow 'nest' area; female is on the right.

By D. TERVER
Laboratory and Museum of Zoology Aquarist Circle of Nancy, France

In the three preceding articles we have successively traced the history of the importation of Malawi cichlids and described their natural habitat, listed the conditions required to rear them in captivity and given a detailed description of Pseudotropheus auratus, Labeotropheus fuelleborni and L. trewavasei, including some aspects of their non-sexual behaviour. The last articles of the series will be devoted to a study of the sexual behaviour of our three species including the mouth-brooding process.

The females of these three species, when they are ready for spawning, show a slightly swollen abdomen and a prominent genital papilla. The latter protrudes up to 2 mm. some 48-72 hours before egg-laying takes place. It is hardly visible in the males. But the sexual maturity of the female causes very obvious colour changes in the males. With P. auratus, the dark bands of the male darken still further until they become an intense black; the light bands stand out and are edged with pale blue. With L. fuelleborni and L. trewavasei, the dark blue transverse bands stand out vividly on a light blue, sparkling, background. Aggressiveness between fish of the same species increases. Mouth combat between males of the same species becomes more frequent and aggression between the species also shows itself. Mouth combat takes place between males of the same genus particularly between L. fuelleborni and L. trewavasei.

In a community tank the males defend their territory even more energetically and are busily preparing a suitable surface for the egg-laying, either by digging a small hole in the substrate with their mouths or by very carefully cleaning a flat stone and removing every grain of sand or detritus from it. Each male tries to attract the mature female into its territory by performing certain well-defined movements. It leaves its territory and swims very forcibly in the direction of the female and gives a violent twist in front of her—indeed often violent enough to create a disturbance which lifts the sand off the bottom; then it returns to its own territory with an undulating movement, a sort of piloting or guiding movement, with the caudal fin finned out. If the female does not follow, the male will try again, chasing off intruders in the meantime. If she then responds and follows him into his
Placed in proximity to the male's genital orifice, they serve as lures to permit better fertilisation of the eggs already held in the female's buccopharyngeal cavity as she tries to pick them up. The actual egg-laying phase generally lasts only about 2–7 minutes.

When a mature female (abdomen swollen, genital papilla prominent) and a male are placed in a breeding tank, spawning will usually take place within minutes and without any preparation of the bottom surface. If the female does not lay at once she will be chased by the male and it is better to take her out of the tank and place her back in again next day rather than risk her being killed.

If egg-laying takes place on an imperfectly cleaned surface or on sand the female will try to pick up not only the eggs but any bits of detritus, grains of sand and sometimes even shells. These foreign bodies can cause damage to the incubating eggs; so it is very necessary to provide some smooth surfaces (slate) in the breeding tank or in the male's territory in the community tank. With our L. fuellerborni we have seen egg-laying take place over a vertical surface (the back glass of the tank) to which the eggs adhered.

A lone female that is ready to spawn can drop her eggs and start the incubating process in the absence of any partner. In the same way, two mature females can drop their eggs in the course of spawning movements identical with those carried out by a male and a female. The two females will pick up eggs from either one of them. In both of these cases, incubation was not continued after 3 days as the eggs were not fertilised.

A single male can bring about egg-laying and the fertilisation of several females immediately one after the other. Egg-laying behaviour has equally been observed, in the absence of a male L. fuellerborni, between a female of this species and a male L. treecausae. But incubation was not pursued beyond the third day. The number of eggs laid varied with the age, build and, above all, the weight of the female. The number is relatively small in the first-spawners and females of small build, but it can be as many as, or more than, 40 for females of 15 gramm or over (maximum of 63 eggs for P. auratus, 54 for L. fuellerborni). The eggs are slightly pointed at one end and yellow in colour. Their size and weight hardly varies in a significant fashion with the size of the female.

A slight variation in the size and weight can be observed with the number of eggs laid. (Size and weight are less when the eggs are more numerous.) Other measurements at present being undertaken will enable us to summarise these facts in more detail.

This article first appeared in "Aquarama" (France) and is reproduced by permission.

A female Pseudoperchleus auratus whilst mouthbrooding. The throat is distended from the presence of developing eggs
Personal COMMENT
by ARPEE

WHEN I first began to touch on the marine scene I did so with considerable trepidation. It seemed extremely unlikely, with the views that I then held, that I should get much further than a small experimental tank, and nothing that I had seen or read convinced me that, on the tropical side at least, the venture was for other than the manic millionaire. The former I may be, but millionaire, no. The money alone would rule it all out in the long run: or, rather, the lack of it. In those days—they seem far off now—everything was nice and uncomplicated.

In just under 6 months I have gained a little understanding of the tropical marine problem by dint of practical trial and error and I have found the experience utterly fascinating. It has certainly been expensive, but this much was predictable. My only regrets have centred around the loss of life of some of the fishes involved. I just hope that some of the lessons derived from the situation will enable readers not to fully understand where, how and when they might also go wrong and thereby to minimise their own losses. My detailed notes will appear at a future date in PM. In the meantime this column may well allude to marine topics and without this explanation of my recent activities the reader could well have assumed that I was writing from second hand. Such is not my habit!

It is not my habit, either, to be swayed by fashion just for the sake of it. I will therefore remove the possible misunderstanding that my interest in marines grew from the fact that in some circles marines are said to be the current vogue. If this is so the events are coincidental since at the end of the day fashion and vogue are mere whimsies in a hobby—even the commercial side of it—and it is only the amalgam of individual events over a long term which makes it what it is.

I am sure that most ‘natural’ fishkeepers will agree with me that in a hobby with so many backwaters and cross-currents we all specialise in one thing or another every so often. Those of us who are ‘doing marines’ just now are not doing it to go one better than the colour TV next door or the Jensen across the way, but because we feel it is a challenge to us as fishkeepers. Readers, therefore, who may be tempted to take up the subject just because of the pretty colours or because of some form of one-upmanship—please think again. I have watched the death agonies of some of our most exquisite creatures in the past few months—marines seem to suffer terribly in this respect—and their custody should not be undertaken lightly.

This is not to say that those who have never kept a fish before should funk the prospect of trying their hand at tropical marines. There are numerous examples of success in this direction, and I have a shrewd feeling that this has been achieved largely by sticking to proven rules and avoiding short cuts. Perhaps the most sinister factor is success, because an easy time in the keeping of some of the harder marines can blunt the senses in their estimation of the sort of problems likely to be encountered with the less robust species. This is likely to lead the beginner into highly expensive and disastrous undertakings which may alienate his interest at the stage when, given greater caution, a sound and lasting foundation to his new hobby was a distinct possibility.

Enthusiastic though I may appear on this subject, I must make the point that I think it would be a pity if the average fishkeeper did more at this stage than devote part of his activities to marines. The freshwater scene has so much to offer at such low cost that for most of us it must remain the mainstay. Perhaps the best way for us to tackle it is for the marine tank to be something of a showpiece in the home. On the whole it would be a waste to banish it to the fish house; if you have no fish house perhaps it could form the supplement to what you have already. If this means sacrificing one of the many tanks you already have indoors I think this would be in a good cause. Above all, we want the tropical marine tank to be as near our favourite easy chair as possible because one of our jobs is to observe and record what we see going on and to let others in the hobby know all about it. This shared knowledge is of vital importance in what is virtually still a pioneer project. You can feel awfully alone when you see your favourite butterfly fish dancing with death. Hence the problems we are faced with are not so much those of really going places with our fishes, but rather of achieving their survival; if in this we are successful we may find them beginning to flourish, and this is where the most
profound satisfaction begins because we see them at last in their full condition and colour and temperament and few things are more wonderful.

I am glad to hear from Mr P. Howe that my July notes on the subject of lighting aquariums contained some ideas for him to develop, and in particular those concerning underwater lighting. He has asked me to elaborate on the theme, with particular reference to the effect on fish of light sources other than the conventional overhead one. Underwater lighting involving submerged light sources is probably best reserved for really large aquaria, in which cases I have seen lighting units supplied for garden pools quite successfully employed. There is no reason why any low-voltage submersible sources could not be used in smaller aquaria, but I do not know of any on the market: the question of space also becomes important when considering the 2 to 4 ft. tanks commonly used in the home, and in these circumstances one could consider using bulbs outside the aquaria provided that these were arranged in such a fashion that they did not overheat. Outside the aquarium sources do not, of course, require low-voltage supply. The technique simply is to wedge a lamp behind a rock formation and to arrange the spread of illumination to suit your taste. External lamps can be fitted into false back or side units and masked from view by judicious positioning. On no account should any lamp be visible from the normal viewing area.

Having said this I must emphasise that I think this method of lighting a tank should be used sparingly. As Mr Howe rightly says, the normal thing is for fish to receive their light from above, and undue emphasis on side or back lighting from low down is likely to create altogether the wrong impression and may well look ludicrous in a small tank; a public aquarium, however, might get away with it. I can't say that I am terribly fond of the underwater light because it looks artificial as it really is. What Mr Howe may care to experiment with is the use of external lighting (side and back), shone through varying thicknesses and colours of plastic sheeting in an effort to achieve subtle and restful tones in the places where our water comes to an abrupt and visually upsetting end—at the panes of glass in our tanks. In this connection insist on clear glass in all panels; some firms are now substituting pebbled or stippled glass in the rear panel, presumably because it is cheaper, and I deplore the habit absolutely as being aesthetic arrogance of a high order.

As I suggested in my article, any form of experimentation in this sphere is likely to be rewarding and satisfying and not very costly. But try to avoid sensationalism, which is as upsetting to the fish as to the discriminating observer. Almost anyone can design things these days in terms of patterns and colours and dimensions and a pretty dreadful thing emerges which passes as art: I have in mind the awful unsatisfactory thing call psychedelic design, which any graduate from art school can do with his eyes shut. It is quite a different thing to blend quiet and natural shades into Harris Tweeds, for example. The one excites and the other relaxes, and since in fishkeeping we are concerned with natural processes I think we must use our decorative techniques with restraint.

I hope Mr Howe and others who have shown interest in this matter will send in their findings and comments. I would suggest that they should all bear in mind that no arrangement they arrive at can by the nature of things be perfect, and this in itself will stimulate improvisation after improvisation (and often some back-tracking), but always there will be an incentive to keep on with the project in the belief and hope that next week will see the achievement of some carefully planned improvement.

Transatlantic TOPICS

Carl Maria Friedrich Ernst von Weber was a German music composer whose fame rested principally on the three operas—one of which was "Der Freischütz".

Now the word schutz in German means protection or cover and a contemporary descendant of our musician asked for just that for his aquarium when he sent the American Army Air Force a bill for €77.22. Herr Weber claimed that a Galaxy C5 Transport plane flew so low over his house that the sound waves produced cracked the glass on his fish tank, spilling out the fish, ruining a carpet and staining the ceiling on the room below.

Accepting responsibility, the Air Noise Commission said that in future efforts will be made to ensure that no flights of such a disturbing nature will be made.

'Seeing the world' no longer costs the earth. With the major airline companies offering big reductions in travel and with almost every large U.S. and Canadian city as near as our nearest travel agent, it follows that more and more of us will get the opportunity to visit the New World.

Those attending their first Ameri-

Continued on page 366
The Emperor Tetra

(Nematobrycon palmeri Gery)

By R. ZUKAL

Photographs by the author

Translation by F. MARSH

NOWADAYS there seems to be an implicit agreement amongst aquarists that the community tank must contain only rare and more expensive fishes—danios, barbs, minnows and livebearers are no longer enough. Neons and the other tetras are the order of the day and the emperor tetra takes pride of place amongst these. Although they were only imported into Europe from Colombia in 1960 their peacable character and the fact that they reach a size of only 2 in makes them very suitable tank inhabitants. The elongated, slim body is slightly compressed at the sides. A dark line, bordered on top by a phosphorescent band, stretches from the emerald green luminous eye to the forked tail. The dorsal fin (which is crescent-shaped and elongated) is yellowish, as are the pectoral and caudal fins. Like Sumatra barbs, the emperor tetra takes up a head-down position when resting, even when perfectly healthy.

They can be kept well in a medium-sized tank with a water temperature of 72°F (22°C). Plants should be placed in the tank so that there is plenty of room for the fish to swim about freely. In the literature it is stated that the water should be semi-hard and slightly acid. Personally I do not have such water available—my own tap water shows pH 7.4 (slightly alkaline) and the hardness fluctuates between 12 and 18 degrees dH. But the fish do very well in this water—the males display often and I have seen the old fry of this species swimming around when it has managed to escape the voraciousness of the rest of the community tank inhabitants.

This led me to the conclusion that the propagation of this species is not as difficult as some people would maintain. Sex differences are easy enough to recognise in the adult fish—the male’s dorsal and anal fins are elongated and the tail fin is three-lobed. The female is smaller and usually fuller. So that I could make a photographic record of these fish, I prepared a 4-gallon tank, using tapwater that had stood for some days and raising
the temperature to 75°F (24°C) (it can go up to as high as 82°F or 28°C without harm). The tank was planted with a bunch of Java moss and a couple of Myriophyllum japonicum plants.

Although much stress is laid in the literature on the use of soft and slightly acid water, in my opinion this is far less important than finding a suitable male. For several weeks before the desired spawning I kept the fish apart. When the female was 'full' enough I put both partners in the prepared tank one evening. Next morning, the barometer showed a rising pressure, and the spawning began right away. The spawning reminded me of that of the Namostomus species in that only single eggs were produced but here the difference was that spawning took place much more quickly. The number of eggs is not large—perhaps this is why this fish is somewhat of a rarity. During spawning I didn’t observe the fish eating any of the eggs but I had to remove
both partners afterwards. It is wise to colour the water slightly with trypstatin to prevent the eggs developing fungus. The broad are free-swimming after about 30 hours and they will then take fine live food.

I would advise any aquarist who has a pair of emperor tetras to have a shot at breeding from them—many will be surprised at their success—it really is a great deal easier than it is usually thought to be.

NATIVE MARINE AQUARIUM FISHES—2

Sea Scorpions and Flatfishes

By H. J. Vosper & G. J. Vosper

LAST month the blennies and gobies were introduced as examples of littoral fishes suitable for the aquarium. In continuation of the series some of the bulheads are described here and some notes on flatfishes that might be caught are included.

Bullheads

Perhaps more generally and best known as sea scorpions, because of the presence on the British list of the freshwater bullheads, these are small, chunky and picturesque-looking fishes with broadly flattened heads armed by backward pointing spines. When disturbed they can expand the gill-covers and cause the spines to be erected. Despite the various fantastic common names of the two species found on the shore (i.e. father lasher, sea scorpion, long-spined sea scorpion, stingfish) they are harmless to all but their prey, because the spines are not poisonous. Some fishing birds of the sea shore (heron, for example) have been known to fall foul of these little fishes, dying with one stuck in the throat by the erected spines of the gill-cover.

Unfortunately, the common names father lasher and sea scorpion are interchangeable, which is why we invariably refer to the long-spined sea scorpion for the first species mentioned below.

Long-spined sea scorpion (Parasilurus letho Euphr.). Also known as the long-spined cottan and lucky prawn, this fish is common in the middle and lower shore zones, either in pools or under stones. It is known to grow to a length of 300 mm, but the usual size on the shore is perhaps 80 mm, or so. The large head and body are comparatively bulky in relation to the tail region, while the broad head ensures a wide gape so that it can engulf larger prey than at first might be imagined—a good-sized prawn, for example, only the crustacean’s long feelers being left poking out from the fish’s mouth to signify the end of some prize specimen.

The long-spined sea scorpion is quite pretty, being mottled and marbled with various metallic sheens of green, red, brown and grey. The broad flattened head is well armed with spines: five of these are very conspicuous on each gill-plate while one on each side is especially long and strong. The colours are variable not only between individuals but in the same one according to circumstances of light and surroundings. It is not really an active hunter but, not being a good swimmer, waits patiently until a small fish or crustacean comes near. Additionally, it can half bury itself in the sand; the eyes are situated towards the top of the head.

Father lasher (Cottus scorpius L.). Very like the preceding species, C. scorpius is somewhat larger (up to 400 mm), does not have one long spine on each gill-cover and is, nowadays, less frequently recorded on the shore.

Pogge (Agonias cataphractus L.). Faithfully related to the Cottidae, this fish or armed bullhead is a small and strange-looking fish, never more than about 130 mm long, coloured a rather dingy yellowish grey and distinctly barred with four or five blackish saddle bands. The head and rather angular body are curiously covered with hard bony plates, coarse scales on the body, spiny plates on the head. The mouth has several upright spines, the lower jaw is bearded, the tail is thin and elongated. It is local in its distribution, haunting river mouths especially, and liking pebbly sand.

Flatfishes

Although probably to be considered the most remarkable of intertidal fishes as far as body structure is concerned, the flatfishes do not make particularly interesting inhabitants of aquaria. Most of those likely to be encountered in rock pools or in sandy shallows are suitable for tank life. The species generally encountered are plaice, flounder, sole, salmonoid and common toadfish. These are almost invariably youngsters, varying in size from 45 to 200 mm, but adults fit for the pot also may be found. Those we consider best suited to the small aquaria are young plaice, Pleuronectes platessa L., of around 75 mm in size. They should be kept in tanks with a bottom layer of medium coarse sand (no pebbles), because fine sand will be disturbed too greatly by their activities. Foods consist of pieces of mussel and shrimp but other flesh will be taken.

CATFISH lovers will want to be on the trail of the striped perhole catfish (Dionema urostriatum), suitable specimens of which have been on scale at £2 to £3 each. These armoured cats are not at all colourful but are splendidly streamlined and have a most attractive broadly striped black and white tail.
Transatlantic Topics

continued from page 362

can fish show will find many differences from our own. Gone will be those rows of irregular-shaped show jars; their place will be filled by a more uniform array of 'drum bowls.' Imagine a golden bowl, British vintage, with two flat sides that don't distort the occupants. There in a nutshell is the American equivalent of our 'sweet jar.'

Judging by the problem posed by the shortage of square jars ever here (P.F.M., February), perhaps the drum bowl is the answer? Have we some enterprising British manufacturer who would supply these to the home market? I'm sure show staff and exhibitors alike would welcome such containers, if only from the point of view of uniformity. The exhibitor would have the assurance that all fish staged thus, would be starting under the same conditions and the judges would find their difficult task made that much easier.

If you want to change a fish judge from a placid individual to that of a berserk Sgt. Major then have them try to adjudicate a fish in a container labelled 'Holland Toffee.' It has happened—I know because I was the judge. Have any of our readers stories to tell about the strange fish containers they have come across in their careers?

* * *

Isn't it strange just how much enjoyment folk can derive from other people's mishaps, especially those of yours truly. My misfortunes published in P.F.M. over the years have given immense pleasure to many I know. Like the time I inadvertently poisoned ed many of my guppies through using a plastic bucket that had been 'borrowed' by a member of my family for mixing weed-killer in. The moral of that tale is obvious.

A recent 'accident' of this type involved one New World fishkeeper. Whistling chlorine to his swimming pool (hmm! can he afford to have mistakes!), he found the hose had developed a leak and had thoroughly soaked the surrounding garden. Within minutes the area was one mass of writhing, wriggling earthworms, which our fishkeeper gratefully gathered up, somewhat like the Israelis with the manna in the desert. His fish, fed with such a windfall, flourished.

The postscript to the tale has a warning. When this supply of worms was exhausted he repeated the soaking but his efforts were in vain. Not a worm in sight. Apparently the initial chlorine had killed off all the inhabitants of that piece of ground and he was left with a garden as sterile as the interior of a space probe.

Guppy Types  No. 15: The 'Blacks'

EVER since the breeding of animals and the propagation of plants came under human control, man has sought to produce the bizarre! Foremost in his striving to outwit Nature has been his obsession with the colour black. Who hasn't dreamed of growing the black tulip, breeding the black canary and, in our own field, the all-black guppy?

In attempting the latter the early fishkeepers behaved empirically, rejecting all the scientific advice that it couldn't be done.

According to my researches, the first black guppies reached England in 1954. They were part of an exchange between a Hendon hobbyist and Dr. Edward Schmidt from Germany: English albino guppies for German 'half-blacks'.

The males displayed a blue/black body, dorsal and caudal fins being a light cream. For the first time we saw guppies that had black pectoral fins. The females that accompanied them (a rare event for that time because the Germans weren't too keen on parting with female guppies), and half their bodies a smoky black over a gold base. Fins were streaked with blue/black lines.

Dr. Schmidt went on to win many successes with his guppies at both the London and Berlin shows (1958) and the Bremen International (1959), but of those imported into this country we only know that over the next decade their progeny appeared in many forms, including the three-quarter black.

One peculiar feature of the females was that it was possible to have brood sisters half of which showed that half-black body and half that didn't. It caused much speculation amongst early breeders.

In 1959, after much effort, I finally crossed a guppy with a black mollie, but like that early Biblical experiment of Jacob's the progeny were all speckled and spotted and what was even worse—sterile.

Other aquarists throughout the world in search of the elusive 'black' had better successes but even so the nose area still remained anything but black.

One American top-guppy man, George B. McCroskey, in an exchange of correspondence on the subject, wrote: 'I am now breeding three strains of half-blacks and all of them are difficult to breed'.

The more black one produced in the male guppy, the greater seemed their chances of them developing tumours. This manifestation, known as melanosis, was explained by the late Dr. Myron Gordon, a research zoologist:

'In hybrid fish pigment cells are stimulated to abnormal growth in response to the combined heredity factors contributed by both parental races. The colour cells multiply out of proportion to the surrounding tissue and develop into large black tumours. These blackened areas, or neoplasms, cause parts of the body to break down and the fishes then swim in a crippled condition.'

Though his experiments had been with platys and swordtails, his description explained what was happening to our guppies when we attempted to introduce too much black pigmentation.

Despite the difficulties, John C.
Mortenson, U.S. guppy breeder, laid down a programme in November, 1962; an experimental crossing of a delta, half-black male guppy with a female from a green strain. By August the following year he was producing huge black females with the largest tails ever seen.

That same year, Radlett, Herts., guppyارن، George Goodall, achieved the same success and started a strain of females that was to go on enhancing his reputation for many years to come. We had finally achieved a breakthrough.

On 18th February, 1965, I received a letter from G. Smith, chairman of the Judges and Standards Committee: 'I think it is a good idea to make some attempt at sorting out the list of black and partially black guppies and request that you call a meeting to discuss the same. One suggestion I want on the Agenda is that the wording: “a colour variety with fins of any Standard type” be emphasised.'

His interest was prompted by a conference held the previous year when these guppies had come under fire. Delegates finally agreed that black, half and three-quarter blacks be regarded as simply colour varieties. The following was finally established and is still in use:

Black: Black colour to extend over half the body length and to include both dorsal and caudal fin.

Half-black: Body as for 'black' but finnage allowed in any colour and recognised finnage shape.

Three-quarter: Black must extend from the caudal peduncle to the pectoral fin joints. Fins any colour and in any Standard outline.

Though most of the world has now adopted this classification, other countries with the emphasis on colour rather than shape, included special classes for these fish. In June this year, the O.G.G., Austrian Guppy Association, had classes for the half and three-quarter blacks in both the triangle (delta) and fantail at their show in Vienna. The Canadians went further and included delta, half-black-red and delta, half-black any other colour. Some U.S. shows even have a female half-black class.

Despite all the great strides made in fish genetics, hormones and colour feeding, the all-black guppy has still to be produced. Then, come to think of it, so has that tulip and canary bird!

J. K.

What’s New?

Tanks Within Tanks

AVAILABILITY of tank space, as any hobbyist knows, is regulated by a variation on Parkinson’s Law—no matter how many tanks the aquarist has—be it one or twenty—he will never have enough tank space for his needs. The Kenny Compartment Breeder goes a long way to solving this problem. Introduced by Kenny (Petreated) Products (41 Derby Road, Portmanouth, Hants.) as a breeding unit, it has many subsidiary uses, such as a means of isolating injured fish, keeping the turbulent away from their tanks, dividing an aquarium into half, or guarding precious plants. Made of four clear plastic rectangles or squares 6 in. wide that slot into corner pillars, the units can be linked up to form a complete tank within a tank, 6 in. wide, 12 in. (for the 12 in. tank) or 14 in. (for the 15 in. tank) deep, and as long as the tank itself, or they can be used as a rest of breeding compartments into which, by careful manipulation, a fish can be trapped without netting and without change of water or water temperature. One side of the unit carries its own filtration system—a foam plastic hung through which water is drawn by an internally placed air-lift. Replacement parts are available for corner pillars, plain screens and filter screens, water circulator and filter and blank set. The recommended retail price of the complete unit is £9.50 and £1.25 respectively according to depth of the unit.

Fibreglass Tanks

A MARINE tank equipped with heat, light and filtration unit should appeal to many a bristling perspective marineist and the Readibilt Bio-80 Marine tank (Readibilt Products, The Green, Boughrood Monchelsea, nr Maidstone, Kent) offers as one unit a fibreglass reinforced polyester resin tank, 22 in. deep, 20 in. wide and 30, 46 or 60 in. long fitted with a fibreglass hood and two 100 watt heaters, two air pumps, two air/water lift systems, a fluorescent ballast unit, a tropical daylight tube, 12 in. incandescent strip lights, 10 ft. of 3-core cable and an electric control panel. The tanks are equipped with Bio-Flow filtration plus traditional filtration chamber. A special feature of these aquariums is that the hoods do not take any fittings and can be removed without becoming entangled with cables and tubing. A range of tropical freshwater aquaria is also available fitted with lighting and heating equipment linked to a control panel with spare connections for other electrical fittings. Price range of the marine tanks is from £290 to £110 and for the 36 in. to 60 in. freshwater aquaria from £42 to £75.

Plants for the Cautious

FOR those aquarists addicted to Metynnis, scats, monos, puffers and large cichlids, Inter-Pet’s (18 Church Street, Dorking, Surrey) new range of Permanent Plants should prove welcome. Moulded in a non-toxic plastic to resemble the natural species as closely as possible the species are reputed to be virtually indistinguishable from similar live plants. The plants are fitted into a triangular tray to allow firm fixture in the aquarium substrate. There are 27 different species in the range, which include many popular but far from hardy exotics as well as a selection of the more common ones.
The Silver Scat

THE family Scatophagidae has long contained aquarium favourites although the prices have never been low. The two common varieties, Scatophagus argus and Scatophagus rubrifrons, which in reality is a colour variety of S. argus, are virtually all imported from the tropical Indo-Pacific where they abound in the sea and estuarial waters as well as fresh water.

Their feeding habits have done little for their reputations, although in some areas they are eaten, since they seem to congregate for feeding in areas where sewage is dumped into the sea. Actually, the name Scatophagus means ‘dung-eater’ or ‘offal-eater’, and much of their stomach contents has been found to comprise mud and sewage. Even Sir Francis Day mentioned their reputation as ‘foul feeders’, so it would seem safe at least to soften this by referring to them as ‘extremely omnivorous’.

In the experiences of many aquarists, the argus and rubrifrons scats are less hardy and more particular about what they eat than aquarium literature in general seems to suggest. They are often friendly and unafraid but in spite of a tremendous display of embarrassment at feeding time and giving the appearance of darting around after scraps in many cases they eventually become emaciated and finally die. An abundance of live food helps prevent this, as well as an addition of salt to their water. Strangely enough, they have a cousin possessing all the charm and attributes of the more popular scats plus the legendary hardness and omnivorous appetite which somehow are not always found in aquarium specimens of Scatophagus.

Solenotoca multifasciata is immediately recognisable as a member of the scat family. Sometimes called the ‘false scat’ or ‘silver scat’, the disc-shaped, deep and compressed body and the often stiffly alert dorsal spines are the same, but colour is a shining silver, with the tiny ctenoid scales almost invisibly lost in the silvery sheen. In certain light there is a very faint brassy quality, and the body is adorned with a variable number of vertical bands which break into vertical rows of dots just below the distinct lateral line. The soft dorsal and anal are long-based but shorter in length than on Scatophagus, and are edged with black. These fins are employed in propulsion in a manner somewhat similar to that of puffers (Tetraodontidae).

Solenotoca multifasciata in my experience is a much more tolerant fish than Scatophagus. I have kept silver scats under a variety of aquarium conditions including even an aquarium with old, soft water which had turned quite brown from dyes and probably tannic acid leaching from a large...
hardwood (cedar) stump was present. Under every sort of conditions, a friendlier, more satisfactory and lively gluton could hardly be imagined. All food was relished: ox heart, frozen brine shrimp, boiled oatmeal (rolled oats) and even dried, high quality dog food. The last-named is best given after pre-soaking it in a small quantity of water to soften it. Don’t attempt to use dried dog food that is advertised to ‘make its own gravy’. At least part of the diet should comprise vegetation. Alfalfa rabbit food pellets, algae or spinach are all good, as well as celery tops.

As with the other members of the family, the silver cat will benefit from hard, alkaline water with a couple of teaspoons of aquarium salt per gallon added. The fact that it will tolerate other than ideal conditions is no excuse for keeping them in such unless facilities temporarily require it. Temperature range seems not to be critical, anything between 70°F and 80°F being suitable, although rapid fluctuations of temperature should be avoided.

The silver cat is a fish with character. Its boldness, its curiosity and its individuality place this native of the Australian coastal waters high on the list of fishes for the true collector.

Hints and Tips with Surplus Plastics Part 6

By H. J. Gilbert

Many of the plastic channel sections used in the home or on the car are useful to retread erosion of the top of angle-iron tanks. The U-shaped strip used in soaking car windows may be coated on the inside with an impact adhesive, and another coat is applied to both faces of the flange at the top of the tank before slipping the section over it. The walking-stick section used for edging hard board may be glued to the underside of the tank top flange, leaving the small curl round the flange edge. Of course, the flange must be dry and rust-free before applying either section but both methods will prevent further damage by cover glasses.

For the handyman aquarist stripping down electrical equipment or air pumps etc. the problem of lost nuts and bolts as well as other small parts can be overcome by sticking a length of the double-sided adhesive plastic strip to his bench. Small items placed on it will be there when required for re-assembly.

For those of you who can obtain off-cuts of sheet Perspex, here is an ideal material to manufacture a whole range of thermostat and heater holders etc. It is easily worked by sawing, drilling and bending if necessary by immersing in boiling water. Chloroform or acetic acid will stick it if the correct adhesive is not available.

If you have to advise beginners in the hobby on how much dry food to feed their fish, or ask a non-aquarist to look after your fish whilst you are on holiday, it is comparatively simple to devise a suitably sized measure for the correct amount from the plastic caps to be found on toothpaste or shaving cream tubes or various bottles to be found round the house. Handles may be made from soft wire twisted tightly round the cap or by sticking a plastic spoon to the closed end with a contact adhesive.

In conclusion always make sure that any materials that are being put into your fish tanks are inert at the higher temperatures of the tropical aquarium. There is a wide range of adhesive and plastic materials on the market, when they are required, although sometimes the application of heat, say from a soldering iron, will bring about a satisfactory seal. In some cases where it is necessary to make holes in plastic, provided that it is not inflammable, it is better to make the initial hole with a hot red or wire and then open it up with a file, as drilling tends to cause cracks.

Book Review


This is one of Hamlyn’s all-colour paperbacks. I am churchish enough to point out one spelling error, the rather odd colour of the porcellan clown, the shape of the Hemichromis bimaculatus and the impossible Victorian and unrealistic built-in aquarium on page 24. We all have our faults, however, and no-one could pretend that the foregoing should seriously detract from the intrinsic value of this book, which must be an all-time tropical marine-fishkeeping bargain buy.

It is written by a professional in the art who has clearly set out to help the beginner at tropical marine fishkeeping, and he has been aided greatly by George Thompson’s beautiful drawings and diagrams. He has stuck to the essentials and has kept the book free from such clutter as those tedious and inaccurate sea water formulae which seem to have bemused other writers for what seems generations. Of particular interest is the section on butterfly fish and their vagaries, and this includes a number of hints on how to anticipate and avoid trouble in the management of this highly expensive group of fishes.

The sections on Invertebrates, Feeding and Diseases pack a lot of really useful information into a little space, and of course the illustrations contribute handsomely. In the pages devoted to fishes there is perhaps more emphasis on fishes suited only to public aquariums

Continued on page 372
How to Make an Aquascape

By J. W. Batts

An aquascape by the author in which a low glass panel is used at the front to contain the water

Photographs by the author

On my first visit to the British Aquarists Festival at Belle Vue, some 2 years ago, I was looking forward to seeing the remarkable fishes that I had heard would be exhibited. Although I was very impressed by these, another scope of fishkeeping caught my eye, namely the aquascapes.

The members of my club, Ealing & District A.S., with whom I went were also very impressed, so, on our return to London we decided to include a special class for aquascapes in our closed show, which was rapidly approaching. To encourage members to enter this class, a trophy was presented, which I was lucky enough to win. The response was excellent. The judges and standards committee were very impressed and decided that the exhibits were worthy enough for a FBAS Class to be made.

This was carried through and a year later we were pleased to have achieved FBAS ruling, and we had a special class with these official rules in our open show. I think it would be correct to say that Ealing & District A.S. have pioneered with the aquascape class in the south.

In this article I will describe, with the aid of pictures, how to construct an aquascape. The first syllable of the word being aqua, all aquarists will know this means the introduction of water, although not quite on the scale of a furnished aquarium.

The second syllable is 'scape, as in landscape, meaning a scene.

The best way to construct an aquascape is to take it in stages: stage 1 is the idea. What scene are you going to try to create? There are many you can choose from, such as, a woodland scene, the scenery of a hillside or even the section of a riverbank.

The next decision you have to make concerns the container you are going to use. There are many different types; two examples are shown in the photograph. If you are entering your aquascape in a show,
always make sure that your kind of container is acceptable.
A tank is a good container to use. If you prefer, you can leave all the side glasses in, although I suggest that if you remove the front glass and put in a glass strip just high enough to hold the water, you will find that you do not have to keep building up your aquascape from the top of the tank, but can arrange your plants from the front as well. Another advantage of having such a strip of glass along the front is that there will be no condensation. If you do use a tank with four side glasses, always be sure to rout your top glass on four blocks, so that the air can circulate inside your tank.

An expanded polystyrene box is another container you can use. This type of box can be bought at any tropical fish shop for a few pence. When you cut the front out of the box, remember to leave a ridge about 3 inches high to hold the water.

An ordinary wooden box can be used, but it must be painted at least six or seven times with polyurethane paint to make it waterproof. This can be a long and tedious job.

Whatever container you use always be sure that it is watertight, because it would be disappointing if you were disqualified for absence of water, because the container leaked and was empty by the time it was judged. If the schedule states maximum size 24 in. by 12 in., this means you can use a container any size up to, but not exceeding, the stated size. There is usually no limit to height, so in this case a 24 in. by 12 in. by 15 in. would be acceptable. For showing it is advisable to mount the tank on a plank of wood. The reason for this is that you will then find it easier to carry it out to your car without tilting the aquascape; also they become very heavy when completed.

When you have decided what container you are going to use, you must decide on a foundation. Personally, I prefer to use gravel, mainly because it always easy to clean, the plants are easily planted and provided that the gravel is well rinsed, the water in your aquascape will remain crystal clear. This gives a good effect, especially when entering a show. Another foundation you can use is sand; this is another good example, because you do not have to worry about washing it; a quick rinse, preferably through a sieve, and the job is done. The only disadvantage of using sand is that it becomes very heavy when wet. Sand can be used. Although the cheapest foundation soil is definitely the most messy, especially when you are breaking down your aquascape. It is also inclined to slide towards the water, making it very murky.

The types of decorative material you can include in aquascapes are various. I will tell you about three of them, although there are many more. Rock is always very effective; there are many types to choose from, e.g. Westmoreland, sandstone or granite, and the only one that it is not advisable to use is limestone. This will litter into the water and kill your fish. When choosing your
rock always look for an attractive shape that will flatter your aquarium. It is an advantage if your rocks are all the same colour or varying just slightly. You will notice that I have used rock in the aquascape in the pictures.

Slate can be used, especially if you use Italian slate, which is grey with a rust-coloured stripe running through it. As slate usually has sharp edges it is advisable to file it down on the edges that are going in the water; if you do not, you may end up with headless fishes!

Wood is another decoration that can be the most attractive of all. Roots of trees that are weather-beaten and hardened are usually quite easy to come across. Another example is bark, which gives a better effect if used in small quantities. Nearly all the wood I have told you about can be bought at most florists.

We come next to plants, and as you know there are hundreds of different types of plants for you to choose from. To make it easier, I have divided them into three sections:

Wild—cheap and plentiful
Indoor—potted plants
Garden—cheap and colourful

Wild plants obviously provide the cheapest means of furnishing your aquascapes. In the winter these are apt to be scarce, but when used in the summer months they will last for ages if planted correctly. Potted plants can be rather expensive, although miniature ferns are very pretty and usually are quite cheap to buy. Garden plants are the ideal thing to use, especially the types that produce miniature flowers.

Whatever plants you intend to use, before planting always keep them in a polythene bag; frequently sprinkle them with water and they will stay fresh. When you begin to plant your greenery always be sure to hide the roots, either by cutting them back or by pressing them deep into the gravel. This aspect is important as it will affect your points when entering a show. Another thing to remember is that your plants are supposed to look on a miniature scale.

Never use too many different varieties of plants; two or three types should be enough, although you can use as many of these types as you wish. In the photographs you will see that the plants have first been arranged along the back of the tank; this gives more room to arrange and set out the smaller ones needed for the front.

If you are going to use lighting on your aquascape you must be careful where it is situated. It is advisable to have the lighting at least 2 feet away from the top of your container. If you do not, plants and water will probably dry up. A 20 watt bulb is the maximum you should use. fluorescent lighting is very good because as well as producing the necessary amount of light, you will find that the heat from it is considerably less than with bulbs. Coloured bulbs give quite a good effect when used in the home aquascape, but they are not a good idea for a show because this produces artificial colour and therefore you would probably be downpointed.

The pointing system for aquascapes is divided into five sections, so points being the maximum for each section. The first section is fish and other animals. These have to be perfect and being colourful is an advantage. Their size must be in proportion to plants and container; adult fish that are of standard size are also an advantage. Fish are compulsory in your show aquascape, although frogs etc. can be added. The second section is plants. These must be healthy, the more green the better, and if you keep the same types of plants together you will find this an advantage in the pointing. Always make sure that no roots or weights are showing.

Design, the third section, speaks for itself really, meaning the perfect layout, the way you construct your aquascape and the artistic way you use your materials.

Balance is the fourth section. This is to say that the amount of water you use should not overpower the greenery you use.

Originality is the last section of pointing. More points will be awarded to original ideas, as long as these concur with the rules. If you build novelty aquascapes and use figures and no plants, the preference will be given to the person who has made the figures himself.

If you intend to include lizards or frogs, please remember to use a full-glassed tank; also keep a glass on top otherwise you may find that your tank will soon be empty of its inhabitants. If you are interested in having an aquascape in your home, by using the correct plants, such as ferns and small potted plants, you can make your aquascape look just like a picture.

When you are ready to add your fish, I think it is advisable to use coldwater fish; I think you will agree that a heater and thermostat really spoil the effect, although they are necessary with tropical fish over a long period.

A question I am asked often is: will aquascapes last long? Well, if planted correctly they should last for months, if sprinkled once a day with cold water. I kept one for 3 months without a plant or fish dying, so it can be done.

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Book Review

Continued from page 369

than the beginner would care for, but since numbers of these species may be marketed in ignorance the unsuspecting buyer may nevertheless find their inclusion helpful in a warning role. I heartily applaud the writer's decision to deter beginners from buying certain fishes either absolutely or until they have had their apprenticeship in the craft. It is this presence of balance and authority that makes this book significant.

I should have liked more information about marine aquarium chemistry for, good as the section is, it does less than justice to the nitrites problem and how to cope with it. I am a little surprised that mention was not made of nitrite testing kits, their strengths and weaknesses. This, coupled with the logic of the undergravel (semi-natural) system, would have been particularly apposite at a time when so many aquarists have been won over to this system.

The price is right and the production is wholesomely modern and well-conceived. I hope this will develop into a hardback (expanded) edition in the course of time. Highly recommended.

ROY PINKS
Thoughts on Fry Rearing

Some time ago I wrote articles in ACPF on breeding programmes for livebearers and egglayers, and since then have been asked often about rearing the resulting progeny. There is no denying that different varieties require different treatment, and that livebearers as a whole are much easier to rear than egglayers. Some egglayers are relatively easy to rear, as for instance, cichlids, where parental care can have so much effect, but egglayers generally are more difficult to rear. This is not due to any inherent weakness in the fry but is often due to the wrong environment provided.

The fry of egglayers tend to be considerably smaller than fry of livebearers, and even amongst them there are widely differing sizes in the various species, with some of the cichlids being amongst the largest and some of the amphilobus being amongst the smallest. This is not to say, though, that the smallest are the most difficult to rear. Some have large mouths for their size, and usually it is the fry with the smallest mouths that are most difficult.

It can be said at once that any fry can be reared successfully provided that water conditions are right and that food is adequate, but these simple requirements are not always easy to carry out. Many hatcheries lose fry through chlorine in the water supply in my particular area and many more are lost through inadequate feeding. One of the main problems in hatching is to provide for one's fish the maximum possible space in which to live and grow, but to do this for fry is simply courting disaster.

It is always necessary for the food to be exactly where the fry are, and to put them into too large a space simply means that the food provided is too spread out, and they will not find it. A far better procedure, especially for the vital first 2 or 3 weeks, is to keep them in small containers and move them to larger ones as they grow, always keeping the same water, and gradually increasing the amount to suit the new container, as they are fairly susceptible to water changes in the early stages. By doing this the food available is always in front of them, and they are never hungry. If it is not immediately there many varieties will not look for it.

Another reason for lack of success is the clinically clean conditions provided by many aquarists. This is all to the good when dealing with adults in community tanks, and a clean tank looks well, but the conditions in which fry are reared in Nature are not like that. Shallow water containing rotting vegetation are the conditions under which many are reared, and this results in a limitless supply of infusoria and small aquatic crustaceans, insects etc., not to mention the numerous mosquito and other larvae available when they are large enough to eat them. These natural conditions probably account for the fact that most fry will not go in search of food—they do not need to; so under artificial conditions the food must be provided in quantity, and a successful fry tank seldom is clean.

The food to be provided for them must also be suitable, and this usually means that live food is necessary. A supply of green water can be a help, though, in any case, being live and moving is usually better. It is surprising how much organic material can be used in a small space, provided that it is living, and it usually does not interfere with the oxygen content of the water which is also vital for the fry.

Although the tanks for fry need not be particularly clean, I should emphasise that the water must be well oxygenated, and not rich in harmful bacteria. Sediment and live food in abundance can be present, but the water must not have that white cloudiness which indicates excess of bacteria. It is not necessary for a diffuser to be running continuously so long as the fry are not overcrowded. The space allowed should contain them as a whole, but should not be further restricted, and a small proportion of the water should be changed daily (not directly from the tap).

Foods for the fry depend largely on the variety being raised. If they have mouths too small for newly hatched brine shrimp then Infusoria must of necessity be used. Liquify is a fine substitute, and in most cases needs only to be used for the first few days. In using newly hatched brine shrimp it is also not strictly necessary to use continuous aeration, and good hatches can be made without aeration at all if it is not readily available. Temperature is more important though, and they will not hatch as well if they are too cold.

In feeding cichlids raised with their parents in large tanks brine shrimp is too readily dispersed, and micro worm is much more reliable, at any rate until the fry are actually schooling. When of course they will hunt out and find brine shrimp wherever it is. At that stage they could be removed from their parents to be raised in a separate tank. Anabantid eggs can be floated off into a small container after 3 days, and the fry raised in a much smaller space as I have indicated above. The eggs of egglayers (barbs etc.) can be removed on the plants, and also hatched under full control, as can those of killies, both top and bottom spawners.

Few people realise how much improvement in size and quality of livebearers can be made if they are raised under controlled conditions. If they, too, are kept in restraint where the food is, and the space expanded as needed, it is surprising how much more they are able to eat, and how much more quickly they grow to a larger than usual size. To do this it is only necessary to place a gravid female in a separate small tank and remove her when the brood is complete. All the fry can then be raised, and the ones in the brood which turn out best have not had their chances curtailed by being eaten by their parents.

People often say that in Nature
London’s

It’s difficult to decide which aspect of the Aquarium Show gives most pleasure—the annual get-together of old friends throughout the hobby—or the new fish, equipment and ideas on view. This year was a happy mixture of the two.

New was the FBAS Supreme Championship stand; draped royally in purple and bearing a splendid array of the fish world’s top denizens, it proved a major attraction. Very new indeed were the yet unidentified species of Tanganyikan cichlids in a display arranged by SCANO. African cichlids had also been flown in by the British Ichthyological Society and visitors were able to see an arranged demonstration of the nature of territorial aggression in their Haplochromis burtoni. Expert knowledge and advice was also freely available from the other specialist societies—the Goldfish Society of Great Britain, the British Killifish Association, the Fancy Guppy Association and the Cactus and Succulent Society of Great Britain, who joined in the Show in this, their fiftieth anniversary year, with a fine display of cacti suitable for the fish house and colour pictures of plants in flower.

Old friends welcomed from abroad included a party brought by Mr George Cattanach from Germany and aquarists from Denmark, among them Mr Leif Christiansen, the well-known authority on killifish. Coaches with fishkeepers arrived from Ipswich, Deal, Hastings, Weston-super-Mare and the Isle of Wight to join hobbyists from Portsmouth to Manchester.

There were plenty of new ideas displayed on the trade stands; manufacturers and distributors had called upon their apparently inexhaustible well of invention and new equipment, foods and remedies were being shown alongside the well-tried favourites by Fantasy Products,

Winning tableaux:
FIRST: Basingstoke A.S. (top picture)
SECOND: Hemel Hempstead A.S.
THIRD: Bracknell A.S.
Hilside Aquatics, Kenray (Patented) Products, King British Aquatic Accessories Ltd, Peterana Ltd (Hikari), Phillips Yeart Ltd, Eric Woods (Rosewood) Ltd, Trophy Products and Tachbrook Tropicals Ltd. Modern tanks in their variety of shapes and materials were being shown by King British, Readhills Products, Tachbrook Tropicals and Trophy: the fish and plants to fill them were available from Amphill Aquatics, Duddon Hill Nurseries, Fonshill Aquatics, Hayes Aquatics, Meadows Garden & Pet Centre and Tachbrook Tropicals. Mr L. Sarony’s coral stand disappeared from sight behind the crush of viewers, and a comprehensive display of corals and amphipods by B & B Reptile Supplies of Manchester aroused immense interest. Books in wide range were on display at the Aquatic Book Service stand, and at the stands of TP (Great Britain) Ltd and PFM: Mr Keith Barracough and Mr Gordon Holmes (King British Ltd) also arranged a continuous screening of colour slides taken on their recent visit to fish collecting and exporting centres in Malaysia.

Among the AQUARIUM SHOW ’71 tableaux this year are the little “extra” displays by fishkeepers for the public to view—like the magnificent panels of different aquarium fish groups, that Mr Alec Fraser-Brunner designed and painted, or the aquarium that Mr John Batts designed for the FRAS stand, the trigger fish that Mr M. E. Roche exhibited on the FRAS stand and the two “tubes” (tunnels) that started back at the public beside their own picture on the cover of the September issue of PFM. Mr Jim Kelly loaned for show a beautiful illuminated ceramic fish that had been presented to him by the members of the Indianapolis, U.S.A. Aquarium Society for fostering good Anglo-American aquatic relations via his regular feature in the magazine "Transatlantic Topics."

Finally, we come to the stalwarts whose efforts might spread over many previous months or be concentrated in bursts of furious activity during the Show week but without whom the Show would not be staged. There is the Show committee—Mr C. A. T. Brown, Mr W. R. Sherwin, Mr A. Blake, Mr T. Glass, Mr F. Glynn, Mr E. C. Tomkins and the officers of the Federation of the British Aquatic Societies who support the Show so wholeheartedly. Show secretary Mr Gerry Greenhalgh and his assistant Mr John Pollard who organised the competitive side of the Show so expertly had to contend this year with the added burden of television cameras and crews both on opening day and at the prize-giving. Mr Greenhalgh’s band of stewards included Mrs P. Lambourne, Mr D. King, Mr D. Lambourne, Mr D. J. Mackay, Mr N. Martin, Mr W. Nethercote and Mr I. Smith, and the speed with which all concerned broke down on the Sunday evening must have created an all-time record! Show manager Mr Cliff Harrison and Mr Jim Kelly are others of whose work for the great week starts many months beforehand and without the help of Mr Fred Campbell, Mr Doug Holleyman and Mr Sid Lunn, opening day might take place several weeks later. To all these people are due the thanks of the whole hobby—because that’s what the show is all about—bringg the attention of the public to our hobby and persuading them that they are missing out by not joining us.

The AQUARIUM SHOW ’71 Tableaux

I AM very happy to record that I have been made to eat the very words with which I closed last year’s AQUARIUM SHOW report (AFM, December, 1970). I then wrote that this year’s Show will be hard to equal. Societies—in 1971 you have excelled yourselves!

Though reduced slightly in numbers, the tableaux constructed by the ten competing societies were a sight to gladden all who saw them. Outstanding winners, Basingstoke A.S., evoked happy memories for me with their tableau, as I have travelled along the River Mississippi on such a paddle steamer (replica, of course—I’m not that old!). Basingstoke members’ attention to detail, use of bright colours, well-dressed “period” figures plus the liberal application of suitable background music ensured that they were placed first by all the other society judges. Second place went to the Church-
Runnymede A.S. tableau was placed fourth in the voting by entering societies. Hendon A.S. showed that they have already entered the Common Market with overseas contacts.

The British Killifish Association London Group staged a fine display of new and old species on their stand (below).

Scene from Hemel Hempstead A.S. complete with lightning flashes, thunder crashes and an opening tomb! The only reservation I had about Hemel’s well-constructed and painted scene was the repetitive noise of the storm, backed up by eerie organ music from the church.

Passing through Hemel Hempstead B.R. Station on the way home, Fred Campbell and I thought we could hear it still ringing in our ears!

Bracknell A.S. made a third place with a Gypsy Encampment and Mrs Cheryl Sheldon informed me that the figures in their tableau this year (a strong point with this club that has helped them to success in the past two Shows), were all new. Those magnificent dolls from the 1970 Japanese Garden had been auctioned off by the club. How many noticed the real oxtail (or was it hedgehog?) soup bubbling in the cauldron or the small baby snuggling in its mother’s arms?

Fourth place was awarded to the ‘Barrack Boy’ from Runnymede A.S. Did you know that the figure so ably selling his wares was used in the James Bond film Diamonds?

Southend, Leigh & D. A.S. used a model fairground to display their tanks. Convict cichlids were conspicuous in the Isle of Wight A.S. tableau.
Are forever, pictorially featured elsewhere in the Show because of its special aquarium scenes?

As for the remaining tableaux, I can only say that you lost out or, in the case of Erith and District A.S., missed the bus, to a very high overall standard. Having participated so often in this type of aquatic construction and having judged similar displays in the north for the past 10 years, I can sympathise. Consolation to the losers is that often very little separates the successful from the also-rans.

One comical interlude came when I apprehended a very young, over-enthusiastic visitor to the Show making a desperate attempt to steal a ‘policeman’ from the Isle of Wight A.S. prison tableau! However, I still cannot understand why nobody helped themselves to those realistic ‘spaghetti’ sandwiches, a feature of the Independent A.S. ‘Mad Hatter’s Tea-party’. Perhaps that dormouse wasn’t as sleepy as Lewis Carroll led us to believe!

With regard to how the tableaux are judged, I have often spoken against the method that allows each competing society to choose from first to fourth (excluding their own). This year I must be honest and affirm that as the results came in to me and I totted up the scores, it was refreshing to find just how fair and consistent the results were. The temptation to mark the sheet to suit your own club is always there — after all, we are human. The fact that every club resisted this is to their credit.

All in all, I have but two regrets about this year’s AQUARIUM SHOW tableaux. The first, that more clubs do not take up the challenge to stage such a display, which can involve all their members. Secondly, that though this year’s AQUARIUM SHOW nearly coincided with the anniversary of that day in 1865 when that illustrious sailor, Lord Nelson, fell fatally wounded at Trafalgar, nobody used it as a tableau theme.

Still, Britain’s seafaring heritage was saved; the winning tableau did at least contain a boat! Britannia waves the rule!

Competitive Section Results in Full

The competitors gaining most points, and the Pet Library trophy, at this year’s AQUARIUM SHOW were Mr. and Mrs. S. F. Payton of Chesham A.S. The Scarce Challenge trophy for the best fish in the show was awarded to Mr. G. Greenhalph for his.

The T. Hoozeman Rose Bowl for the best furnished aquarium was won by Portsmouth A.S. Judges Mr. F. Tonkins, Mr. H. Towell, Mr. R. Wiggs (PBAS), Mr. G. Holmes (FNAS), Mr. D. Phillipsmore (FGA), Mr. E. Wood (MAAS), and Mr. Wilson (GSGB) also made the following awards, which were presented at the prize-giving by Mr. A. Fraser-Brunner: PM trophy for best Barb, Mrs. A. Pollard; Halvin Cup, best characoid, Mr. and Mrs. Hudson; Marsh trophy, best cichlid, Mr. and Mrs. Terr; Nimcoil trophy, best labyrinth, Mr. G. Greenhalph; Rena trophy, best eelgamy toothcarp, Mr. S. Tarrant; Inter-Pet trophy, best Corydoras or Bowfin, Mr. R. Wright; Johnson trophy, best catfish other than Corydoras, Mr. G. Greenhalph; Tetramin trophy, best mbuna, Mr. D. P. Pettitt; PM trophy for best dianis or minnow, Mr. J. E. Connolly; Longlife Medal, best loach, Mrs. V. Reigh; Eelime trophy, best tropical eelgamy, Mr. and Mrs.
Tees; 'Trophy' trophy, best male guppy, Mrs C. Sawford; FGA Shield, best female guppy, Mr D. W. L. Baggett; Penguilly trophy, best swordtail, Mr A. Blake; TFH/Miracle Shield, best livebearer, Mr L. J. Brazier. Boughton trophy, best goldfish, Mr J. Lamboll; Longlife Medal, best native and foreign coldwater, Mrs J. Stilwell; FBAS Council trophy for best breeder's entry, Mr H. Watts. The Society with the highest total points, awarded the Taylor Smith Cup, was Kingston & D. A.S.

Detailed results were:

Barbi: 1, Mrs A. Pollard; 2, Mr T. F. Butler; 3, Mr P. Coyle; 4, Mr D. W. Armbrum, Champion; 5, Mr and Mrs Hudson; 2, Mr M. L. Martin; 3, Mr J. Pollard; 4, Mr J. R. Connolly, Chisholm; 1, Mr T. Davidson; 2, Mr M. Strange; 3, Mrs E. Tucker; 4, Mr W. Williamson, Angiela; 5, Mrs Nelson; 2; and 3, Mr J. Batta; 4, Mrs A. Shuttleworth, Apsitriagramma.

Pelmatochromis, Namaquensis: 1, Mr P. Tee; 2, Mr R. C. Barrow; 3, Mr R. Rowley; 4, Mr L. W. Jordan, Labyrinth; 1, Mr R. G. Godich; 2, Mr D. W. Armbrum, Champion; 3, Mr J. Hughes; 4, Mr D. D. Boote, Siamese fighting; 5, Miss G. H. Nielson; 2, Mr C. Gray; 3, Mr R. Hunter, Fighter; 4, S. Kaye, Koi; 5, Mr T. G. J. Martin.

Carp: 1, Mr S. T. Morris; 2, and 3, Mr G. Connolly; 4, Mr A. C. Tuff, 3, Mrs Matheson; 4, Mr D. J. Mackay, Dainty and exhibition; 1, and 2, Mr J. E. Connolly; 2, Mr T. F. Butler; 3, Mrs C. Batta, Leach; 1, Mrs V. Reid; 2, Mr and Mrs Tee; 3, Mr L. J. Brazier; 4, Mrs Quennell, A.A.A., exhibitors; 1, and 2, Mr and Mrs Tee; 3, Mr J. Howe; 4, Mr R. C. Bicker.

A-V, male guppy: 1, Mrs C. Sawford; 2, and 4, Mr E. C. Harvey; 3, Mr P. Coyle, Av. female guppy; 1, Mr D. W. L. Baggett; 2, Mr L. J. Brazier; 3, Mr C. Browning; 4, Mr J. Batta, Swordtails; 5, Mr A. Blake; 2, Mr R. T. Matthes; 3, Mr T. F. Butler; 4, Mr W. Williamson, Angiela; 5, Mrs E. Tucker; 2, Mr L. J. Brazier; 3, Mr A. Blake; 4, Mr R. Wright, Malaces; 1, Mr D. J. Mackay; 2, Mr and Mrs Hudson; 3, Mr D. King; 4, Mr J. Hatton, A.A.A., Livebearers; 1, Mr L. J. Brazier; 2, Mr D. J. Mackay; 3, Mr D. King; 4, Mr and Mrs Fagan.

Fry Rearing

Continued from page 357

only two or three fish out of hundreds ever reach maturity, and seem to look on this as natural. This is because the fry are part of the food chain, and nearly all are eaten. Very few though succumb through illness, and as fanciers we cannot afford to lose fry because the very ones we lose could have turned out to be our only show winners, and in any event it is only the best individuals from each hatching that are worth propagating to carry on the strain.

As with spawning fish, which will breed if conditions are right, fry will be raised without trouble if conditions are right, too.

FBAS Supreme Championship '71

FEW of the thousands of visitors to the AQUARIUM SHOW and of the millions who later watched him on TV would have imagined that Caesar, the snakehead who became the Supreme Champion of 1971, arrived at the Show in a plastic dustbin! Two strong men helped Mrs S. Hedges, Caesar's owner, to transfer him to his 48 by 14 by 14 tank on the Supreme Championship stand, where he spent the rest of

Mrs S. Hedges with her FBAS Supreme Championship Trophy and Caesar the snakehead

the Show period displaying magnificently, taking a great interest in all that went on but behaving impeccably and looking every inch a champ. Eye-catching though he was to the general beholder there were, as might be expected, great many other high quality fishes on display in this FBAS competition to be admired by knowledgeable and critical visitors. Six awards were made in the Supreme Championship. The winner received the FBAS Council Supreme Championship trophy to hold for one year.

Second to Caesar in the placings by judges C. A. T. Brown and R. D. Esson was Charlotte, a red Oscar owned by Mr W. Waterman, that was classed best cichlid at last year's AQUARIUM SHOW.

Third was a Plecostomus rachowi, belonging to Mr Gerry Greenhal, fourth, a Botia striata, entered by Mr Maurice Carter. Mr S. Connolly's Ctenopoma kineslecia, a fish with a splendid record of successes in shows, came fifth and a native marine fish, a cornpot blenny (Olivarius guttirnus) entered by Mr H. L. Doubleday of Torquay, was awarded sixth place.
NEARLY 500 entries were bunched at EALING AND D. A.S. (P.B.A.S.) third Open Show, an increase of over 100 on last year, and thanks are extended to those twenty societies who gave their support. Several aquatic firms donated prizes and provided posters, and there were P.S. Stevens (Birmingham), Plants by Mr. A. Blake (Birmingham), Plants by Mr. V. Collins (Walderslade).

THE Bracknell Trophy for the best fish in Show at BRACKNELL & D. A.S. (P.B.A.S.) was won by Mr. G. Greenhill of Kingston. Annual closed trophies were presented to the following: M. & D., Mr. D. Archer (Basingstoke), 年, Mr. G. Greenhill of Kingston. Annual closed trophies were presented to the following: M. & D. table fishes (highest average, 30 points), Mr. M. Goode; the Cecil Pepper Cup for best Bredwell table fishes (highest average, 30 points), Mr. D. Archer; the Aquarium of the Year (Jack Norris Cup), Mr. and Mrs. M. Carter; the Goldfish Cup for best Bracknell fish, Mr. Carter. Nine Fish Society judges made the following awards to winners in the Open Class Show.

Mr. B. Ankin, together with Master J. Ankin, a leading junior member, who has been made an honorary member of recognition for his services.

BEST Fish in Show at TORREY A.S. third Open Show was a nicolálted goldfish owned by Mr. R. King of Torbay, which also won him a gold pin (the second he has won this year) and the Cup for best coldwater fish. The Fish Society Championship trophy for the best marine in the show was won by Mr. H. L. Douthalday with a Brevipinnis garveg, which enabled him to enter his fish for the Fish Society Championship Trophy Competition at the Aquarium Show '71. Over 1,000 visitors attended the Torbay Show, which attracted a record 154 entries from all over the south west. The Bristol branch of the Killifish Association had a most attractive display, and other striking displays included one by the local BMAS, a marine display tank by the Tropical Fish House, Exeter, as well as 20 large and small furnish aris set up by Torbay club members. The Torbay Cup, the most popular fish in the show went to Mr. & Mrs. M. Williams of Rondada, and other special awards were: Woolley Perpetual trophy (Mr. R. King); Mr. M. Leeder (Plymouth); best junior entry and £5 voucher for best angler (awarded by the Tropical Fish House, Exeter); Master John Edwards (Llantrisant Mayor). Individual class winners were:

Preliminary Dates for your Diary

See page 384

A report from KINGS LYNN A.S. tells of the escape of a Spanish turtle from the care of Mr. Alce Ford, Ten club members tried unsuccessfu to net the turtle from one of the Queen's lakes at Sandringham, where it has been nesting well on the Queen's fishes.

The Pet Fish Monthly, December 1971
Since fire demolished HOUNSLOW & D. A. S. meeting place eighteen months ago members have been without permanent headquarters, but despite all the temporary premises that have had to be used Society activities and forthcoming meetings have continued to flourish. However, a permanent venue has now been found; this is at St. Stephen’s Church Hall, Whiston Road, Hounslow, Middle, where meetings are held alternate Wednesdays at 8 p.m.

(Topos). Broders tropical egglayers: Mr. J. P. Bland (Tittington), Broders livebearers: Mr. W. G. Curnick (Tilmanstone). Broders coldwater: Mr. R. Nicoll (Turvey). Tropical marine: Mr. A. Cary (B.M.A., Miss tody). Nature marine: Mr. H. L. Dodds (Summertown).

THE EDMONTON SECTION OF THE FANCY GUPPY ASSOCIATION recently held their annual Open Show, the largest open guppy-only event held in southern England, attracting 170 entries (296 guppies in all) from all over the home counties and the Midlands. Best in show award was won by Mr. K. Lee with his naturalised female, which also won best guppy and the award for the best female (Mr. P. T. Tennyson won the award for the best male with a delta, and the colour male owned by Mr. and Mrs. D. Phillips received both the best breeders award and the Keith Barraud trophy. Prize-winners were:

Males Delta, Mr. T. Tennyson (73 points). Female, Mr. D. Burch (73). Tertiary male, Mr. S. Croft (71). Long slender male, Mr. J. P. Bland (71). Long slender female, Mr. R. Nicoll (71). Dorsal, Mr. G. Stannard (71). Colours, Mr. K. Lee (71). Previous winner, Mr. T. Tennyson (71). Dorsal, Mr. K. Lee (71). Colours, Mr. and Mrs. D. Phillips (70). Junior male, Mr. G. Parry (69). Ladles male, Mr. D. Baker (68).

Females. Silverfish, Mr. A. R. Fish (74). Seahps, Mr. M. Brownrigg (74). Walipin, Mr. M. Jones (68). Membrana, Mr. K. R. Fish (67). Goulondrill, Mr. S. Croft (66). Colours, Mr. T. Tennyson (65). Natural, Mr. K. Lee (67). Junior female, Mr. G. Parry (65). Ladles female, Mr. D. Baker.

Brooders. Males, Mr. and Mrs. D. Phillips (73). Females Mr. K. Lee (72). Matched pairs, Mr. D. Cropp (71). Mating breeder, Mr. and Mrs. D. Phillips (73). Adaptor breeder, Mr. and Mrs. D. Phillips (71). Experimental males, Mr. and Mrs. D. Phillips (70).

Judges at WELLSBOROUGH & D. A. S. fourth Open Show were Mr. H. Towell, Mr. D. Cannon, Mr. C. A. T. Brown, Mr. B. Baker and Mr. A. D. Jeffs. The best fish in show award, gold pin and PBAS trophy went to Mr. S. Cowell of Bethnal Green for his Ctenopoma kingi. First places were awarded to the following:


HOUNSLOW & D. A. S. recently held their eighth annual Open Show which was well supported by aquarists from a wide area. Over 270 entries were received, making a fine display, and society members have recorded their thanks to chairman and show manager Mr. R. Searey, also to Mr. S. Brookes, and former member Mr. S. Inch who kindly provided and installed the public address system. Best fish in show was a very fine Hemangorum pitcher owned by Mr. R. Pook of Slough. Mr. R. Searey presented the awards to the following class winners:

Mini aquaria: Mr. P. Caine, Dwarf guppy: Mr. A. Jones, A.S.A. guppy: Mr. E. Osborne, Siamese fighters: Mr. R. Bowes. Elegante, Mr. P. G. Golightly, Mr. C. Collins. Colour: Mr. H. Piggott, London, Mr. M. A. A. Banks, incubator: Mr. R. Piggott, Melanoteuthis: Mr. D. Piggott, Dwarf guppy: Mr. R. Piggott. A.S.A. London dwarf: Mr. D. Piggott, Dwarf: Mr. D. Piggott, Dwarf guppy: Mr. R. Piggott.

AWARDS
Male guppy: Mr. R. Piggott, Male dwarf: Mr. R. Piggott, Female Siamese fighter: Mr. R. Bowes, Dwarf guppy: Mr. M. A. A. Banks, Dwarf guppy: Mr. D. Piggott, Dwarf guppy: Mr. R. Piggott, Dwarf guppy: Mr. R. Piggott, Dwarf guppy: Mr. R. Piggott, Dwarf guppy: Mr. R. Piggott, Dwarf guppy: Mr. R. Piggott, Dwarf guppy: Mr. R. Piggott, Dwarf guppy: Mr. R. Piggott, Dwarf guppy: Mr. R. Piggott, Dwarf guppy: Mr. R. Piggott, Dwarf guppy: Mr. R. Piggott, Dwarf guppy: Mr. R. Piggott, Dwarf guppy: Mr. R. Piggott, Dwarf guppy: Mr. R. Piggott.
FEDERATION NEWS

Federation Looks Ahead to Next Year's Events

THE Federation of British Aquatic Societies with all their member societies the Compliments of the Season and Best Wishes for 1973. Support for the Federation during the past year has been very gratifying, and the services to societies have been expanded. In addition to the vast amount of effort expended by the Judges and Standards Committee, Publications, Tissue and Badges (including labels, showcards and cup badges) and Trophy Secretariat, the appearance of the FBAS Quarterly Bulletin has helped enormously in establishing communications between the societies and the Federation. The creation of Area Judges and Speakers' Panels has resulted in a steady flow of judges and speakers being appointed, and the societies themselves have shown support by donating perpetual trophies for awards at open shows.

The Federation collaborated with sponsors in presenting shows in London, and already plans are in hand for next season—which will be kicked off with a Federation dinner dance, thus keeping the many fish widows happy!

It is hoped that 1973 will prove to be a successful year for the societies, and the Federation looks forward to their continued support and interest.

In Brief...

...THE results of SWILLINGTON A.S. third quarterly Members' Show are as follows: toothcarps (J. & E. Emmett trophy), breeders egglayers (St Marks trophy) and best in show, Mr M. M. & A. Crowther; barbs (Richardson Pet Shop trophy), Mr M. Birch; large cichlids (Lindey trophy) and breeders livebearers (Cleve Mills trophy), Mr R. Haislip; small cichlids (John Lumb trophy), Mr M. Haislip.

...WHEN INDEPENDENT A.S. acted as hosts to the NORTH WEST LONDON GROUP in the fourth leg of the annual competition results were: Independent, 63 points; Riverside, 66; Hendon, 55; Anson, 46; Harpenden, 22; Hornsea, 1. Best fish in show award was won by Independent with a Lethrinus acuatus. Judge was Mr K. Nutt and during judging members took part in a cross-corss quiz.

...MR HEMINGWAY of Ealton gave a talk on breeding characins at KEIGHLEY A.S. annual Members' Show. Judges were Mr Pankley and Mr Loder, and the best in show award was won by Mr J. Mosley. The K.B. trophy for the junior gaining most points went to Master D. Mosley, and first place was awarded to the following: Livebearers, Mr Robinson; barbs, Mrs Taylor; carp and minnows, Mrs Hepple; characins, Mr Hart; amphilids, Master Beckett; cichlids, Mr Taylor; catfish and loach, Mr Mosley; a.e., Mr Mosley; breeders, Mrs Gear; a.e. pairs, Mrs Gear; a.e. hatchery, Master Mosley; coldwater, Mr and Mrs Lidinmore; toothcarps, Mrs Beckett.

...RECENT table show winners at BISHOPS CLEVE A.S. have been: Amphibians: 1, Mr F. Serkin; 2, Mr L. Gumblin; 3, Mr J. Hawkins. Mollies, saltwater: 1, Mr A. Helsa; 2, Mr F. Serkin; 3, Mr J. Bishop. Mollies, black: 1 and 2, Mr P. Greenwood; 3, Mr R. Smythe. Barbs: 1, Mr K. Burton; 2, Mr J. Hawkins; 3, Mr T. Evans.

...AT the October meeting of HARBORGE & D. A.S. table show results were: Fighters (1 entry): 1, Mrs Atkinson. A.e.: and best in show, Mrs Atkinson (khali). The auction was a disappointment with only one article to offer, but Mrs Atkinson was again
lucky in winning the raffle. There was, however, no disappointment in the talk on *P. breviceps* given by Mr. D. Taylor. Members have also visited the B.A.F. and were impressed by the way the show was run, and by the standard of fish exhibited.

... **THE SOUTH WESTERN GROUP** of the BMAA are very proud of their achievements at the Torbay Open Show. There were 47 entries in the marine class, and with the exception of one card the BMAA cleared the board. Results were as follows: Tropical marine: 1 and 2, Mr. A. Carr (Ceratosoma trianum and *Ceratosoma cinctum*); 3, Mr. L. Doubladay (Loricaria grumai); Native marine: 1, Mr. L. Doubladay (*Ancistrus gunteri*); 2, B.F.A.S. Marine trophy winner; 2, Mr. D. Farquhar (Syngnathus aquillius). Mr. Graham Cox is the Association’s president, and members look forward to a visit from him soon.

... **BRADFORD & D. A.S.** recently held their Members’ Show and grand reunion. Although there was room for more entries, the fish entered were of a very high standard, and Mrs. Firth won the Best in Show trophy amongst other awards. Class winners were: Livebearers (Brabant trophies), Mrs. Firth; barbs (Kathleen Gill Cup), Mr. Zarnitziet; characins (Alfred trophy), Mrs. Firth; angelfish (Smith trophy), Mrs. Firth; cichlids (Luther Wright trophy), Mr. G. Faircloth; corys (Barrett trophy), Mr. G. Faircloth; fighters (Thorley trophy), Mr. Firth; a.o.v. (A.o.v. Cup), Mr. C. Birtles. Coldwater (Watsnough trophy), Mr. J. Cawthra; breeders livebearers (Breeders livebearers trophy), Mr. Parkin; breeders eelangens (Taylor trophy), Mr. P. Chorley; pairs (Firth trophy), Mrs. Firth; plants (Plant trophy), Mr. Chorley.

... **NEWS from MID-SUSSEX A.S.** includes the success of Mr. and Mrs. Bullock at the Bethnal Green Open Show, where they won first prize with an *Amphogenes lentafera* (85 points), and were awarded the F.B.A.S. Plant trophy. At an inter-club show in September, Mid-Sussex took fourth place out of the five clubs competing. Members have also enjoyed a slide show and tape recording on barbs which was viewed while Mr. B. Baker judged the table show for barbs and cichlids. Class winners were: barbs, Mr. D. Soper (fitch barb, 79 points); cichlids, dwarf, Mr. E. Johnson (*brachysomis*, 58); cichlids, large, Mr. C. Corbin (black acaoa, 78).

... **BILLERICAY A.S.** recently held their A.G.M., when the officers and committee for the coming year were elected. Members also enjoyed a very entertaining ‘20 Questions’ session conducted by Mr. Nigel Natham.

... Mr. M. Hulbert, treasurer of **YEOWIL & D. A.S.**, congratulated club members at their A.G.M. on their high attendance at meetings over the past year. Members now number 53, and thanks to this and the Rochester Open Show, there has been a marked increase in financial reserves. President Mr. S. Langdon suggested that, with the club’s twenty-first year just around the corner, all the old members should be invited to a celebration, an idea endorsed by the secretary and chairman. Junior member Miss Dawn Forward was presented with a special card and medallion for coming second in the Clubman of the Year award.

... **SHEFFIELD & D. A.S.** report the results of their inter-society show as follows: Second leg, held at Rotherham: 1, Workshop (9 points); 2, Sheffield; 3, Rotherham (4); 4, Doncaster (3). Best fish in show, Mr. E. Smith (Sheffield). Third leg, held at Doncaster: 1, Sheffield; (11); 2, Workshop (9); 3, Doncaster (2); 4, Rotherham (1). Best fish, Mr. L. Mawson (Woolpack). Final leg, held at Sheffield: 1, Sheffield; (15); 2, Workshop (6); 3, Rotherham; (6). Best fish, Mr. F. Toomey (Sheffield). Sheffield were the final winners with 49 points, and will hold the trophy for a year; 2, Workshop (3); 3, Rotherham; (6).

... **CHAIRMAN of CASTLEFORD & D. A.S.**, Mr. E. Clowes, expressed his pleasure at 13 best in show awards recently won by club members. Mr. and Mrs. D. Cobain have won 6, as have father and son team Mr. I. and Master R. Hepinstall, the other award being won by Mr. G. and Master G. Thackwain. Members enjoyed not only the telephone demonstrations of live foods given by Mr. I. Hepinstall and Mr. G. Thackwain, but also the show’s table winners were: Juvenile a.o.v., and best fish, Mr. A. Thomas; a.o.v. male, Mr. A. Barrett; dwarf cichlids, L. & S. Pitchford; large cichlids, S. & A. Thomas.

... **NOTTINGHAM & D. A.S.** have elected a new chairman, Mr. C. Hill, owing to the resignation of Mr. A. Sexton for business reasons. Members have enjoyed a coach trip to Belle Vue for the B.A.F., where they were particularly impressed by the marine set-ups.

... **MEMBERS of SOUTHEND LEIGH & D. A.S.** have enjoyed a varied programme at recent meetings, including an open discussion, an auction night, a lecture on ornamental fish by the head speaker Mr. E. Nicoll on diseases, cures and aquarium hygiene, a quiz, and a talk on characins by Mr. D. Cheswright. There was also an inter-club meeting at EAST LONDON A. & P.S., where members enjoyed a talk on coldwater fishes given by Mr. J. Linzle of the GSGSB. Table show judges were Mr. R. Eason and Mr. F. Thorpe, and points for this round were: E. London (20); Thurstock; (6); Southend; Billetay (2); (4); Rylston (96).

... **ILFORD & D. A. & P.S.** devoted a recent meeting to a tape and slide lecture on tropical marine aquariums, covering a large number of fish and types of coral and other decorative features now becoming increasingly available to this most ambitious section of the hobby. Results of the table show by guest singleanted goldfish were: 1, Mr. H. Berger (red-cap ornata); 2, J. Johnson; M. W. Rowse (red-cap ornata and celestial).

... **R.O.** Mr. Ron Dobkins of **EAST LONDON A. & P.A.** writes: ‘Society plans for 1971 include an annual dinner and dance, two social evenings, at least four inter-club competitions, home furnished aquaria and pond competitions, table shows, numerous outings and two shows, plus two meetings each month. Any interested aquarist is invited to come along to 10, Ripple Road School, Barking, Essex, on the first and/or third Friday of the month and join us at a meeting.’

... **ABERDEEN A.S.** hold a meeting in the Y.M.C.A. rooms, Union Street, at 7.30 p.m. on Tuesday, 21 December, where Mr. C. Cox of Buckburn will give a demonstration of tank glazing. Table show is for breeders trio (spanned after 1st June 1971), single barb, and single loach, shub or spiny eel.

... **THE CENTRAL SUSSEX SECTION** of the F.G.A. were congratulated by their chairman on providing 58 entries on the F.G.A. stand at the Brighton open show this year. At their September meeting Mr. Soper gave an informative talk on vitamins and the importance of a varied diet in providing these. It was announced that junior member Miss McNab had been awarded her silver badge.
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5th December. F.B.A.S. Assembly, Conway Hall, Red Lion Square, London, W.C.1. 2.30 p.m.

5th December. BRADFORD & D.A.S. Open Show, Clyde Lane, Club, Great Horse, Bradford, Kissing 7.15 p.m. Schedule 5. Mr W. Holmes, 13 Kings Drive, Wrose, Bradford, 2.

1972

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

12th March. BELLE VUE A.S. Open Show, Openshaw Lea Club, Crossley House, Ashton Old Road, Openshaw, Manchester. Details: Mr R. Everitt, 18 Wetherby Street, Higher Openshaw, Manchester 11.

12th March. TOP TEN A.S. Open Show, Huddersfield Town Hall.

26th March. EAST DURWHICH AS. third Open Show, Territorial Army Hall, Highwood Barracks, Lathom Lane, Lithering, S. Lincs. (Show secretary, Mr R. G. Quantrill, 133 Garden Road, Peckham, 8725 XUB)

2nd March. NELSON AS. Open Show, The Civic Centre, Walsby St., Nelson. Details from Mr R. McKinnon, 32 Bath Street, Nelson.

22nd April. (Provisional) THURROCK AS. Open Show, Thursfield School, Grays. Entries Tropical, coldwater, furnished aquaria, pits breeders classes.

2nd May. OSRAM A.S. Open Show, Recreation Hall, Baguley Street, Oldham. Lincs.

14th May. DERBY REGENT A.S. Open Show, Sherwood Foresters Recreational Centre (Nerumton Barracks), Ollerton Road (A31), Derby. (Sellers F.A.C. sign). Show secretary, Mr R. G. Quantrill, 133 Garden Road, Peckham, 8725 XUB.

14th May. SOUTHEND, LEIGH & D. A.S. Open Show, Show secretary, Mr R. G. Quantrill, 8 Blythe Close, Leigh-on-Sea, Essex.

PetFish Monthly, December 1972


23rd May. CROYDON A.S. Open Show, Provisional.

23rd June. ACCRINGTON & D.A.S. Open Show.

21st June. BISHOPS CLEVEY A.S. Open Show, Fylde Booth, Fylde Road, Bishops Clevey, Chelmsford, Essex. General. Mrs M. Burch, 37 Warden Hill Road, Chelmsford, Essex.

1st August. NORTH STAFFS. A.S. Open Show. Details later.


Classified ADVERTISEMENTS

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Continued on page 586.
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‘Sterba is back’, that is, the newly reprinted ‘Freshwater Fishes of The World’ by Gunther Sterba is again available at £5.55 (£5.85 posted); we have a few copies (pre-re-print) at the old price of £4.50 (£4.80 posted).
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Artificial sea salt with guarantee
5 gall. size - 55p
10 gall. size - £1
20 gall. size - £1.85
Postage 25p on any quantity

LIVING STONES
£1.50 - £5
SEA PLANTS
from 50p

THE NEW SANDER OZONIZER
No. 2. Large enough for 4 sixty gallon tanks - £6.75
No. 3. Large enough for 8 sixty gallon tanks - £17.85

EXPECTED LATE DECEMBER/EARLY JANUARY—

PSEUDOCROMIS FRIDMANI
IN SUBSTANTIAL NUMBERS
TOGETHER WITH OTHER INTERESTING MARINE TROPICALS

WILL OUR CUSTOMERS PLEASE NOTE THAT AFTER JANUARY 1st, 1972, WE SHALL BE CLOSED ALL DAY SUNDAY AND MONDAY

PLEASE NOTE—All enquiries receiving a reply MUST be accompanied by S.A.E. Our premises are situated in the main Stratford—Birmingham road, 6 miles from Birmingham, Midland "Red" Bus No. 150 from Bus Station, Birmingham, passes the door, slight as "The Crown," Monkspath.

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. Parcels by rail. Tropical minimum order £7.50, Insulated container and carriage £1.50. Coldwater minimum order £3 and £1.51 sea and carriage. Parcels by post minimum order £2.50 please add 50p post and packing.

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