

DECEMBER 1970

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# PetFish

Monthly 3s

Vol. 5 No. 8

December 1970

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Editor: Anthony Evans

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## Comments and Quotes

### The AQUARIUM SHOW '70

AS the last stands are pulled down, the last tanks removed and the last puddles mopped up at the end of each AQUARIUM SHOW, the extraneous jumble of impressions, contacts, noise and excitement falls away to leave behind the essential 'aura' of the SHOW that has just ended. And this year the outstanding impression that remains must be of the vast store of goodwill in the hobby that the AQUARIUM SHOW unleashed. The people who contributed to its creation were more numerous than ever—the members of the F.B.A.S. Aquarium Show Committee who had been planning the competitive class arrangements for months; the show secretary, Mr Gerry Greenhalf, whose efforts to make the entries a record number were so successful and who with his team of stewards arranged and organised the benching of entries; the members of the Show Management team who, under show manager Mr Cliff Harrison set up and maintained the exhibition; Mr M. E. Roche, a reader who phoned *PETFISH MONTHLY* to explain that although he didn't show fish he had a nice *Pterois colitans* that he thought might contribute to the SHOW'S attractions (which it most certainly did!); the specialist societies who so enthusiastically devised and built displays; the 17 societies who worked for many weeks to prepare the Tableaux and the members of 32 societies who benched the 460 fish exhibits in the individual competitive classes. The total number of individuals to whom the SHOW owed its success is thus a very large one, and what came out of

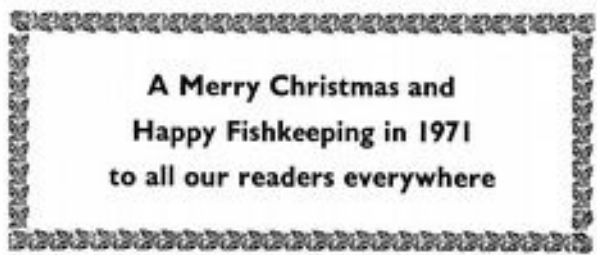
their efforts and enthusiasm was without any doubt the best display of its kind that has ever been staged in London and one that could more than hold its own in comparison with the best of shows ever held anywhere else in Britain.

### Best Not to Mix

WITH direct flights between Florida and this country we are now seeing more and more fishes from that part of the globe filling the dealers' tanks. Fancy varieties of goldfish are one species in question and seeing them swimming with other tropic fish we are often tempted to place them in the home community aquarium.

Though they will flourish in this situation the practice should be avoided, even though they have been raised in tropical temperatures. Many goldfish carry large numbers of common fish parasites without any obvious distress to themselves. When placed with other species the parasites leave the goldfish and attack the less hardy fishes in the aquarium. This comment was made by an expert in a U.S. trade magazine.

So be warned. If you must mix tropic fish and fancy forms of goldfish be sure that the latter have been quarantined in a tank containing a mild fish disinfectant.



**A Merry Christmas and  
Happy Fishkeeping in 1971  
to all our readers everywhere**



# LETTERS

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

### New Use for Sealant

IT may be of interest to readers to learn that the silicone sealant used for making all-glass tanks gives unlimited scope for making cheap aquarium decorations. I have found it excellent for making rockwork, such as caves, arches, etc., by using small stones put together with this material. I intend constructing another all-glass tank and then using the sealant to make the background by sticking flat, very thin, stones on the entire back glass and using a few stones edgewise to provide the fish with ledges.

Lerwick, Shetland

JOHN HENDERSON

### First Clear the Decks

MR V. J. HARGREAVES' letter (PFM, October) about accidentally siphoning fish into a bucket reminded me of a mishap I had when cleaning out a tank completely. I had placed about ten small young assorted fish in a glass bowl, meaning to float them on the surface of another tank. Unfortunately I tripped over the dog's cushion (I have only a small area in the garage for my fish house and, with all the other junk that one collects, the dog has to sleep under one of my tanks with his cushion placed partly under the tank stand). Fish and water spilled down on to the cushion and the fish were swimming about in small pools. One young guppy died, but it could have been worse. The moral of this story is—move everything out of the way before commencing any work with the tanks.

Norwich, NOR 3AC

J. DERBAGE

### Live Foods

I WOULD like to thank Mr Moor for his advice and observations (PFM, October). His arguments against the feeding of daphnia and tubifex seem very valid, and thinking back over my own experiences I must say I am inclined to agree with him. I think that tubifex seems to be the main offender, and shall eliminate this from my community tank, but will continue to feed with tubifex (when available) to my Jack Dempseys as they appear quite immune to everything going; and also it is one of the foods that they appear really to enjoy.

I still stand by my letter (PFM, August) that dealers should supply a regular sale of live food as there must still be hundreds of aquarists who do not agree with Mr Moor. Perhaps dealers could provide some of the foods mentioned in Mr Moor's letter in small quantities. I think this would be of great help to the aquarist, but am not so sure that it would be a practical proposition for the dealer. Certainly bobs' worth of whiteworms, fly larvae, fruit flies, etc., would be very welcome.

With reference to your point that the feeding of live food has more of an impact on the aquarist than his charges, I do not agree with this. I have always had in

mind what dietary effect the food is having for my fish, rather than being pleased that the fish seem to gather enjoyment from the movement of the live foods.

Stevenage, Herts.

D. C. MARRILL

### British Cichlid Association

I WOULD be obliged if, through your Letters columns, you could advise your readers that a British Cichlid Association has been formed.

The main aims of the Association are to further the interest of fishkeepers in all aspects of keeping and breeding cichlids. It is also hoped to establish a service, whereby an interchange of information on both a national and international basis can be maintained.

To this end contact has already been made with the American Cichlid Association, the S.C.C.A. of California and the A.A.A. of Georgia. In addition Dr Robert J. Goldstein of Emory University has agreed to keep us in the picture regarding scientific research on cichlids. It is hoped that a publication will be produced to assist in communication between members. Anyone interested should send an s.a.c. for further details to the following address: Mr Steve Forster, Secretary, British Cichlid Association, 32 Trinidad Way, East Kilbride, Scotland, U.K.

STEVE FORSTER



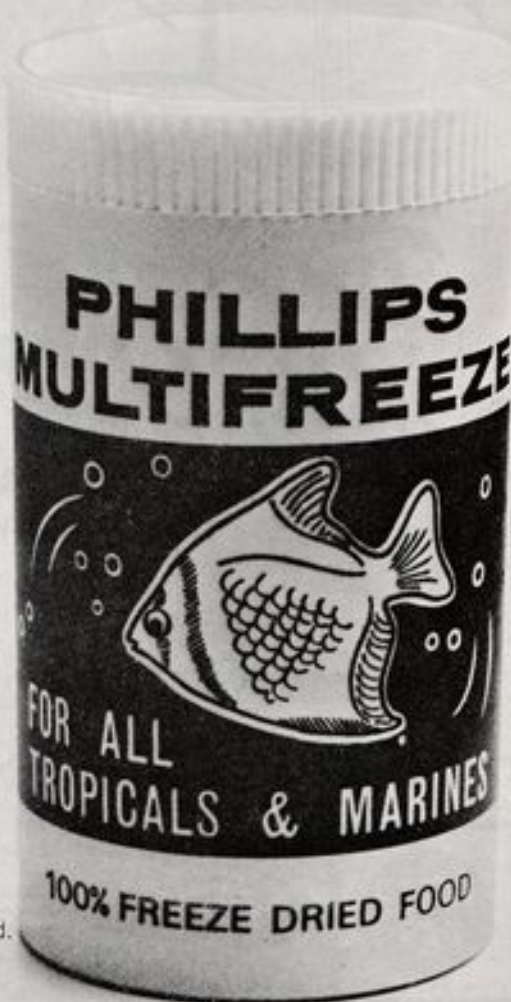
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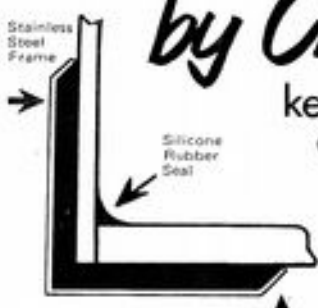
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One Man's Marine Aquarium—3

# Making Your Choice of Marines

By RON TURNBULL

ALTHOUGH the thought of laying out anything up to £10 for one fish might deter many potential tropical mariners, it is a fact that the cost of the total layout for a marine tank compares very favourably with that for its freshwater counterpart, simply because a smaller number of marine fishes are needed to make an attractive show.

Once your tank is set up, and functioning correctly as described in my last article, the time has come to buy and introduce your fishes. What should be considered when deciding what fishes to buy for your first marine aquarium? Many hobbyists think that fishes from different environments or different seas should be kept apart. Others say that fishes from different biological orders will not live together in harmony. On such questions you should consult your marine dealer, and for the beginner with limited finances my advice is to stick to the more common species. Marine fish-

keeping is after all a relatively new branch of our hobby and the information about even the most common of species is by no means complete.

Almost without exception I would advise the beginner to save his pocket-money until he can afford to buy all his fishes at one time. This may seem drastic and a move inviting catastrophe if conditions in the new tank are at fault. I hasten to add, however, that there are a number of good reasons for making a total purchase and, after all, if you have followed the advice given, there is absolutely no reason why your tank conditions should be anything but perfect.

One of the main dangers about making the introduction of marine fish to their new home at intervals is that of bringing in disease. Some species, like the clown fish (*Amphiprion percula*) for instance, will more often than not develop ichthyophthirius (white spot); while this is easily dealt with there is no point

in exposing the members of the community who are already healthily established in their new home to such risks. In the past many healthy marine communities have been ravaged by disease after the introduction of just one more fish.

Buy your fishes from a reputable dealer but if at all possible refrain from making your purchase immediately the fish arrive in his shop. If after a few days the fish look healthy and are feeding well, they have recovered from their long journey and it will be safe to buy. Common sense will tell you which are healthy fish and which are not. Don't worry too much about a fin that may be a little torn provided that it is free of fungus. Marine fishes are much more quarrelsome than freshwater fishes and even in my own community tank there are a number of clowns and domino damsels with nipped fins. To date they have come to no harm and the fins soon grow again.

Clown fish (*Amphiprion percula*) swimming among the tentacles of sea anemones in a marine aquarium

Photo: BARRY PENGILLEY





When buying your specimens avoid adding just one too many to your collection. Ten medium-size fishes are ample for a 20-25-gallon aquarium. Here are some types to make your choice from. Clowns are always striking, in their orange and white striped uniform; so are domino damselfishes (*Danycyllus triaculatus*), a beautifully shiny black oval-bodied fish on to which it appears that some painter has skillfully dappled three creamy white spots; have a couple of tomato clowns (*Amphiprion ephippium*), so called because of their iridescent tomato red colouring; in contrast, keep a pair of minute blue demoiselles (*Abudefduf caeruleus*), which create an eye-catching streak of vivid blue as they dart in and out of the coral. To complete your community a striped angelfish, a pair of honey gregories or similar species will suffice. To help keep the floor of the tank in order try to include a couple of neon gobies (*Eucranius oocarpus*), which delight in eating up scraps of food lying on the bottoms of the tank. If your funds permit, the addition of a pair of wispy coral shrimps and a sea anemone will do much to set off the beauty of your

fishes. Any anemone will not suffice and your dealer will advise you on a suitable species. A word of warning, however: transportation difficulties make tropical anemones a very expensive item to buy.

Without doubt the time between making your purchase and having your new fishes firmly established in their new home is the most crucial period. More fishes have been lost at this time than at any other. Having left the comfort of your dealer's tank the fishes are exposed to many dangers. Get them home as quickly as possible. Once home, without delay, check the temperature and salinity of the water in which your fishes have been carried. Then adjust your own new tank to the same conditions. It is unlikely that there will be a very great margin of difference in either salinity or temperature, but marine fishes are even more sensitive to change than their freshwater counterparts, and you want to take absolutely no risks at this stage. When conditions are the same in both lots of water, the fishes can be transferred. Use a net and as far as possible never allow any of the transportation water to get into the tank. This avoids the

danger of any dormant disease being transferred.

Keep the water in which the fishes have travelled, however, and if any of them show signs of stress, such as tumbling around the tank or gasping for air at the surface, immediately replace them in their original water until they recover.

Keep the tank without lighting for a day or two until the fishes get accustomed to their new surroundings; feed them only very sparingly for the first few days. If possible find out what food your dealer has been feeding them and give them the same. Don't be worried about petty squabbles which may occur during the first week or so. Your fishes will soon work out among themselves their own individual territories in the tank. During the first few weeks keep an eye open for any white spot or other disease appearing, and for any fish in apparent difficulties. If it is at all possible, a small tank permanently set up for hospital or quarantine use will help to minimise your losses.

In my next article I will deal with feeding and general maintenance of marine fishes.

## Meetings and Changes of Officers

**AIREBOROUGH & D. A.S.** Change of venue to Recreational Room, Governors Hall, Rawdon, on Leeds, first Thursday of month at 8.0 p.m.

**APEX A.S. New Society.** Secretary: Mrs P. W. Prior, 96B High Street, Penzance, London, S.W.22.

**BEDWORTH A. & P.S.** Change of venue to Bedworth W.M. Club, King Street, Bedworth, first Friday of month 8.0 p.m. Press officer: Mr M. H. Carter, 1 Culworth Court, Coventry.

**BELLE Vue A.S.** President, Mr R. E. Legge; chairman, Mr Stan Taylor; vice-chairman, Mr P. Keyson; secretary, Mr Ray Davies (55 Wetberly Street, High Osneston, Manchester 11, PA1); phone 061-370 1974; treasurer, Miss M. Cobb; show secretary, Mr J. Breatley; editor, Mrs W. Hoop.

**BETHNAL GREEN A.S.** President/Lecturer, Mr F. Tomkins; chairman, Mr J. Gomer; secretary, Mr P. Arnold (14 Rawson House, Skipswoth Road, Hackney, London, E.8); treasurer, Mr J. Hayes; show secretary, Mr S. Conell; assistant, Mr D. Bundy; P.R.O., Mr P. Brindley. Meetings: every Tuesday, 7.45 p.m., Bethnal Green Institute, Bethnal Green Road, London, E.2.

**BELLEBUCK A.S.** Secretary, Mrs Y. Clarke (1 First Avenue, Billerica, Essex); show secretary, Mr G. Fairley; treasurer, Mr K. Kinabley.

**BRACKNELL A.S.** Chairman, Mr B. Johnson; secretary, Mrs G. Carter (11 New Road, Ascot, Berks.); show secretary, Mr

L. Jordan (62 Farnham Place, Ascot, Berks.). Meetings: The Admiral Cunningham, Bracknell, 2nd and 4th Mondays of month.

**BURY & D. A.S.** Secretary: Mr D. W. Moloney (1 Southfield Road, Holcombe Brook, Ramsbottom, Lancs, BL0 9 ST; phone Tomington 4433).

**CATFORD A.S.** Secretary: A. Jamieson, 59 Hook Lane, Welton, Kent. Meetings: Every Monday, 8.0 p.m., Hollis Road School, Catford.

**CLAPHAM A.S.** Chairman, Mr R. Trim; secretary, Mr H. Trim (87 Chiswick Road, Twickenham, London, S.W.17); treasurer, Mr J. Mills; show secretary, Mr A. G. Hunt. Meetings: Springfield Methodist Church, Wandsworth Road, London, S.W.8.

**DUKERIES A.S.** Secretary: Mrs L. J. Dence (89 Sparkes Hill, Worksop, Notts; phone 2075).

**EAST DULWICH A.S.** Meetings: Second and fourth Mondays, Dulwich Baths Reception Hall, Crystal Palace Road, London, S.E.22. Interested aquarists cordially invited.

**E.G.A. EDMONTON Section.** Chairman, Mr D. Curry; secretary, Mr Don Phillips (101 Wilbury Way, Edmonton, London, N.18 1BX); treasurer, Mr K. Lee; P.R.O., Mr T. Manning; show secretary, Mr H. Rhoad.

**GUILDFORD & D. A.S.** Meetings: Guildford Trades and Labour Club, The

Mount, Guildford, 2nd and 4th Wednesdays in month, 7.45 p.m.

**KELSO & D. A.S. New Society.** Secretary, Mr W. T. Murray (28 Meadow Court, Kelso, Roxburghshire).

**LOUGHBOROUGH & D. A.S.** President, Mr D. Slack; chairman and social secretary, Mr T. Parry; secretary, Mr D. Wood (15 Meadow Avenue, Loughborough, Leics); treasurer, Mrs A. Walker; editor and P.R.O., Mr D. Keeley; show manager, Mr I. Parry; show secretary, Mr M. Farnon. Meetings: Brush Club, Fossil Street, Loughborough, 1st Tuesday, 3rd Thursday of each month.

**MIDLANDS MARINE A.S. New Society.** Secretary, Mr G. Wallace (141 Paper Road, Erdington, Birmingham 24). Meetings: Every 4th Tuesday, Ye Olde Barley Mow, St Margaret's Road, Ward End, Birmingham 8.

**ROMFORD & BEACONTRIE A.S.** Chairman/show secretary, Mr D. G. Kent; treasurer, Mr M. J. Mofat; secretary, Mr R. C. Smith (12th Longbridge Road, Barking, Essex). Meetings: Every other Monday, 8.0 p.m., Elm Park Constitutional Hall, Elm Park Avenue, Horechurch.

**WEYMOUTH & D. A.S.** Change of venue to Sidney Hall (Council Room), Weymouth, 8.0 p.m., first Tuesday of month.

**WINCHESTER & D. A.S.** Secretary, Mr John Cairns (4 Hiltzbury Close, Chandlersford).

**YEOVIL & D. A.S.** President, Mr S. Langdon; chairman, Mr A. Nicholls; vice-chairman, Mr F. Lang; secretary, Mr C. H. Babbell (15 Mayfield Road, Yeovil, Somerset); treasurer, Mr M. Hubbard; show manager, Mr D. Paine; show secretary, Mr T. Rendell.



## Personal COMMENT

by  
ARPEE

EVERYBODY knows what an angel is and what a neon should look like, but what exactly do you expect when you pay your 5 bob for a rosy tetra? Putting aside, for a moment, the precise definition of this delightful and popular community fish, beginners might benefit by knowing that three (at least) common tetras get horribly confused, one for the others, particularly when they are immature. These are *Hypheosbrycon rosaceus*, *H. serpa* and *H. minor*. McInerney and Gerard in ALL ABOUT TROPICAL FISH indicate clearly that the two last-named are rather more chunky than the *rosaceus*, and that *serpa* have a shoulder blotch as compared with a shoulder spot in the *minor*. There is, however, a terrible tangle over nomenclature because there is some evidence to suggest that some fish of similar appearance also derive from *H. callistus*.

This has caused a classification into sub-species of *callistus*, and *serpa* therefore sometimes appears as *H. callistus serpa*, and *minor* as *H. callistus minor*, and *rosaceus* as *H. callistus rosaceus*. There is immense room for research into this interesting group of fishes, but from the practical point of view McInerney and Gerard present you with colour photographs of what you should be getting for your money—or something very like it, at any rate. The *serpa* and the *minor* are reddish rather than rosy; the *rosaceus* at its best is, as its name implies, rosy rather than red. Further, it is an altogether more delicately coloured fish and possesses more transparency than the others.

In my experience the greatest variations in relation to the *rosaceus* occur in respect of the anal fin. In some cases, usually males, there is an enormous sickle-like extension of the fin, but I have seen no lengthening at all, as well as intermediate variations. This may be coupled with variations in the dorsal fin, of a similar nature, and can make sexing a particularly hazardous undertaking. You will also find a great deal of variation in the amount of black and white in the dorsal fin, and of the overall intensity of coloration of the body. This is not altogether accounted for by the fact that we so often see these fish in tanks of alkaline water, in which they do not give of their absolute best.



These South American fishes certainly show up best in conditions of soft peaty water, with temperatures nearer 80°F (27°C) than many community fishes like them. They are not unduly fussy, however, in far less ideal

surroundings, but would-be breeders will find them uncooperative in anything but the best. This may seem odd to those of us who have watched the fascinating courtship dances of the rosy tetra, which are surely one of the outstanding displays of the community tank; to convert these displays into a batch of strongly growing fry is about as frustrating an undertaking as one can tackle, but is so well worth the effort if only you can get the necessary ingredients.

As a community fish the *rosaceus* I have always found to be one of the longest lived and one of the most adaptable, though it can sometimes show a little temperament in the settling-in stages. In this respect it is altogether better as a doer than the *serpa* and *minor* tetras, which somehow seem to tail off after a year or so. The rosy always seems to retain its good looks from fry stage till its death, whereas the others tend to go to fat. I have always found a tendency for the rosy to fade a little with age, a fault which is not shared by the other species (or sub-species!) under review. There are no feeding problems with any of this group of fishes, and they seem to relish dried (particularly flake) food as much as the ordinary run of tubifex, white worm, earthworm, etc.

If you are to breed them you have to isolate your stock from the start and condition them away from the community tank. If a pair takes on colour in the community tank and gives promise of spawning, it is unlikely that you will achieve much by a rapid transfer to what would appear to be ideal quarters, since the change could well prove a positive setback. The blood characins, as fishes in this group are often termed, seem to be fussier about pairing than one would think, and it is therefore quite something to have a couple of compatible fish. Having got this far, the breeder is advised to take things slowly and gradually introduce them to the spawning act, rather than to throw them in tail first and expect them to perform wonders.



There are some very fine bleeding heart tetras (*H. rubrostrigata*) in some of the trade tanks just now, and as they can grow, given room, to about twice the size of the other fishes named above, it is agreeable to associate them with them, either in community conditions or in separate quarters. But I would suggest that if you are to do any mixing, use the bleeding heart as the constant factor and add just one shoal of one of the other species. If you mix them all up in a beautiful large tank full of soft peaty water and they happen to like you you may soon have another lot of *callistus callistus callistus* or something equally frustrating and puzzling to the aquarist and zoologist alike.

Observing the confusion that already exists, and my own undoubted failure to clarify very much of it, the results of your industry would perhaps be rather more than we can bear. If, from what I have written, I have cast doubt on some of the dogma that exists in naming this or that blood characin, a certain amount of justice may have been done, but may we look forward to the day when some genius produces a detailed set of colour plates on the subject, complete with genealogical key! I hope Braz Walker may be listening.

# The Humpheads



*Steatocranus casuarius*

**A**QUARISTS receive many beautiful cichlids from Africa and the genus *Steatocranus* is certainly no disgrace to that continent's cichlids. Fishes of this genus were first imported to Europe in the fifties and one of the most beautiful representatives is this 'humphead' or 'lionhead' cichlid from the Congo, first imported under the name *Steatocranus elongatus*.

The background colour is a plain grey-brown. This, and the not always distinguishable dark irregular stripes and flecks, do not render the fish's appearance specially attractive. Certainly the iris of the eye is luminous emerald green, but it is something other than colour that makes the fish interesting for us. The adult male has a fatty pad on its head, a real 'humphead', which is the origin of its common name. What object this hump serves is a mystery but it is something one doesn't often see in fish, and it makes this species particularly attractive.

These fishes are not likely to appeal to everyone, because they are abnormally timid, spending much of their time in hiding. They are not exacting in their requirements but the water temperature

By **RUDOLPH ZUKAL**

Photographs by the author

Translation by F. MARSH

must be kept between 22° and 24°C (72°-76°F). They swim in a peculiar way, almost as if they had no swim-bladder. In nature, they dart from hiding place to hiding place or from stone to stone against flowing water, and therefore their bodies are very strong. They are decided cave-dwellers and they move about the aquarium bottom. Their movements can be lightning quick, as in feeding when they snatch their prey and dart off.

We have several pairs of humpheads in our exhibition, which we were able to acquire from Herr Zsilinszky in Budapest. The fish have already been bred in both parts of Germany and so we hope also to succeed at this shortly.

For the humphead tank we knocked small holes



in the narrow ends of flowerpots, each only large enough for a fish to get through, and placed the flowerpots with their mouths on the sandy bottom of the aquarium. The number of flowerpots corresponded to the number of males present. The same day that we undertook this housing project, each pot became occupied by a male. And then a comical sight presented itself, as my pictures show. Carefully, very timidly, the males showed only their humphead sticking out of each pot. Only the female of its choice was allowed to approach any particular male to join it in its 'cave'. If another female approached, she would be driven away.

Many breeders of the humphead cichlid affirm that the parents look after their brood together; others are of the opinion that only the female cares for the young and even breaks up the food in her mouth and serves it to them in the same way that we know *Nannacara anomala* or *Cichlasoma meeki* do. However, I should like to remind readers that fish of the same variety or species can differ in character and attributes from one another. As with



With several broken flowerpots as caves and several male humpheads in an aquarium each pot will be taken over by one male. He guards his pot, body inside and head projecting outwards, and will only allow a selected female humphead to join him in residence.

human beings, so do individual fish differ. Only when the pair have spawned and the male has seized the eggs is it a sign to us that the next time this male must be taken away after the spawning.

At first the young fish swim normally. After several weeks their bodies become heavy and the little fish move exactly like their parents—jerkily. For this reason the fins of these fishes are very well developed. For spawning the temperature must be raised to 26–28°C (79–82°F).

Humphead cichlids can be kept in a medium-sized or larger tank, for they grow up to 4 in. in length. Usually they are peace-loving and the 'battles' that they wage among themselves are harmless. The males defend their territory by blows administered with the fins and I have observed this also in rivalry among the females. Any living food is gratefully accepted, one of the favourites being red midge larvae (blood-worms).

## Readers' Queries Answered



### Large Tank Data

*I intend to make, out of 1½ in. by 1½ in. angle iron, a tank of the size 60 in. by 18 in. Could you please answer the following queries: (1) what thickness of glass should be used; (2) how much lighting is required for ordinary lamps and fluorescent lamps and (3) what size heater is required?*

Recommendations for a tank of this size are: glass should be ½ in. thickness and the base of the tank frame should have two equally spaced cross-struts. About 240 watts of tungsten lighting for 10 hours daily will be needed, or a 4 ft. fluorescent tube. The tank holds approx. 70 gallons and in unheated surroundings the equivalent of about 500 watts will be needed to maintain temperatures around 75°F. Four 150-watt heaters controlled by a high capacity thermostat could be used.

### Discus Tank

*In the near future I am going to set up a large tank (6 ft. by 15 in. by 18 in.) and would like to be able to keep discus and angels. How does one get the right pH or DH for discus, how often do you change any part of the water, what sort of filter should I use; and with my discus and angels I should like to keep one black shark, one red-tailed shark, two elephant noses and a 6 in. moonlight gourami. Are these O.K. together?*

Water of reaction around pH 6 (acid) suitable for discus can be obtained by using sphagnum moss peat in the filter box of an outside filter if the water is low in mineral content, such as natural soft water, clean filtered rainwater or distilled water. The peat must be renewed if the pH figure begins to go up. About one-third of the water in an aquarium can be changed for fresh every 3-4

weeks. If the bottom is siphoned once weekly and the removed water is thrown away each time no further change should be needed. A tank of this size should be equipped with a power filter having the capacity of those, for instance, in the Eheim range, if it is stocked to capacity with fish. Of the choice of fish, we should not recommend adding sharks to your tank. The discus and angels would be disturbed by the behaviour of the sharks and would be far less concerned than if these fishes were left out.

### Albino Convicts

*Approximately a year ago I bought a pair of 'albino convicts' and luckily these turned out to be a compatible male and female. Although I had never seriously contemplated breeding them, to my surprise one morning I found eggs deposited on a stone. After 2 days these turned yellow and were eaten. Now I am interested in breeding the fish. I cannot find anything about these fish in books. Can you please help?*

The convict cichlid (*Cichlasoma nigrofasciatum*) comes from Guatemala, Costa Rica and Panama and reaches a size of 6 in. when adult, though it will breed at half this size. It is a rather bad-tempered member of the cichlid group and won't hesitate to attack and eat fishes smaller than itself. Albino forms are found in many species of fishes and the albino condition is merely a lack of melanin (black pigmentation) in the individual fish. Convict cichlids prefer to lay their eggs on flat rocks or pieces of slate on the bottom of the aquarium; they love to hide, so half a well-scrubbed flower pot should be provided. The female, who is distinguishable by her more intense colour, guards the eggs once laid; broods are large and need plenty of Infusoria and fry food in the first week after hatching.

These fish are prolific breeders and it is generally advised that they should be removed to separate quarters for breeding purposes. Alternatively, the eggs themselves can be removed on their stone and kept in a scrupulously clean tank with gentle aeration for hatching. Some breeders reduce the risk of formation of fungus on eggs by adding a mild anti-fungicide such as methylene blue to the breeding tank. Others think that this is unnecessary so long as correct tank conditions are maintained.

### Vanishing Fish

*I would greatly appreciate any help you can give me on a matter which is giving me cause for concern as well as making me scratch my head in bewilderment. I have had a community tank for a week with four guppies, neon tetras, platys and a mottled catfish and now one of the best guppies has completely disappeared. He was certainly there last night and I am beginning to think that the others have eaten it. Could this be at all possible? This disappearance has come at something of a shock and I am hoping you have a suggestion that will set my mind at rest.*

We are sorry to learn of the apparent disappearance of your fish but this is not an uncommon happening. Assuming that the fish has not leapt to its death out of the tank, it may well have died in some hidden spot in the tank, such as under a rock; the body of a dead guppy, which in death is very tiny, is soon attacked by armies of bacteria which cause its disintegration. The catfish also may well have made a meal of the dead fish. Why did it die? Most experienced fishkeepers will tell you how the odd fish will succumb from time to time without infectious disease being responsible and this must be accepted. It goes without saying that this will frequently happen to your best fish!

*ANYONE interested in joining the section of the FANCY GUPPY ASSOCIATION that it is hoped to start in the Brighton, Sussex, area, are asked to contact Mr. Ron Elmer, 24 Samvies Avenue, Peaschaven, Sussex (phone Peaschaven 2534).*

# Effective Lighting for Decorative Aquaria

By P. G. BOUD

OF the various factors involved in maintaining the appearance of a decorative tropical aquarium, illumination in terms of duration, intensity and colour spectrum plays a most important part. It is a matter of common observation that without satisfactory illumination the aquascape will, within a week or two, be an eyesore rather than an attractive feature of the domestic interior.

The water becomes grey, opaque, with a layer of mulm resulting from decaying vegetation, which is stirred into murky clouds by catfish nosing about the broken remains of plants; or conversely, under conditions of over-illumination, the water assumes the appearance of diluted pea-green soup; the glass surfaces and the interior, rocks and plants are covered with a rich pasture of algae and with duckweed so profuse that the tank suggests it is being used for an experiment in hydroponics.

Apart from the possible pollution arising from over-feeding, all this is largely caused by incorrect lighting in one form or another, and results in some novices abandoning the hobby in disappointment. From an aesthetic aspect, correct lighting is essential if the original aquascape is to be maintained—the well-placed groups of different species of plants, with their contrasting shades of green accentuated by the delicate fawns of some species of cryptocorynes, located on gently rising banks or terraces on bright gravel, in water of crystal clarity.

This well-balanced, harmonious scene, which appears natural to the spectator, is invariably achieved by contrived means, in which artificial lighting plays an important part.

These observations lead to the consideration of suitable light-sources. Although the use of natural light is usually dismissed as being impractical, it has a limited application, and within these limitations it is quite effective. Natural light can be used with advantage, particularly during the summer, for short periods.

A tank can be placed on a low

support, allowing the top of the aquarium frame to be level with the bottom of the window. By using a thin sheet of plastic to reduce evaporation loss, and to prevent the fish from jumping out of the tank, the natural light is allowed to shine down into the water and, if either aeration or filtration is used, the motion of the water produces quite an attractive dappled, shimmering effect over the gravel. Of course, the only way to control the light is by either superimposing or substituting the customary opaque cover, and a certain amount of practice is required to obtain a balanced condition. However, the light is all for free and produces less heat in summer than that generated by incandescent lamps.

Electricity, with the above exception, is used exclusively for lighting the domestic tropical aquarium. Incandescent, tungsten filament lamps and fluorescent tubes in combination, or used separately, provide the source of illumination.

What form of lighting should be chosen? The familiar domestic light bulb is undoubtedly the simplest and the most inexpensive and for several small separated aquaria is the source most used. However, aquarists complain at the apparent frequency with which the bulbs have to be replaced. The common light bulb is designed to operate in a vertical and not a horizontal position, and what undoubtedly shortens the life of the bulb is the vibration to which it is subjected when the cover is removed. The effect of shock and vibration is minimised in industry by the use of special industrial service ('rough service') lamps which are not generally available to the public. However, double-life tungsten bulbs are now

freely available and are well worth the extra expense.

The tungsten striplight is quite commonly used in modern tanks having small clearance between the tank cover and the water surface. These are obtainable in two lengths and two wattages (30 and 60), but they have the disadvantage of costing about three times as much as the ordinary light bulb. The main disadvantages, apart from their limited life, is their wattage consumption and the heat they generate. In summer months it is often necessary to switch off filament lamps to avoid the top water temperatures rising into the nineties.

In spite of the above disadvantages, the ease of fitting and initial cheapness, together with the warm golden glow which they cast, cause them to be preferred by many aquarists to other light-sources.

The other source which is gaining in popularity is the fluorescent tube. These are available in a wide range of tube lengths, diameters, wattages and colour values. Their undoubted advantages are the low running costs in comparison with filament light-sources, coolness in operation and the longevity of the tube life; but these factors have to be weighed against much higher initial cost—fifteen to twenty times that of a filament bulb, and the extra complication of the associated control gear, housing and connections.

The novice may well be bewildered by the choice of tube sizes and colours, ranging in length from a mere 6 inches to 8 feet, with a tube diameter of  $\frac{1}{2}$  to 1 $\frac{1}{2}$  inches, and consuming from 10 to 140 watts. Varying shades are obtainable—White, Daylight, Natural, Colour-matching, de luxe Warm White, Warmtone, Kolor Rite, de luxe Natural, Artificial Daylight, and, of course, the most usually encountered domestic colour—the ordinary Warm White.

For stimulating plant growth and obtaining dense, lush vegetation, the Gro-Lux tubes cannot be bettered.



However, Gro-Lux are considerably more expensive than the usual domestic fluorescent tubes. Some aquarists are attracted by their distinctive blue-purple hue, which accentuates the red of the fish and plants, whilst others find this unnatural.

These days it is customary to illuminate tanks of the larger sizes—over 3 to 4 feet in length—by fluorescent lighting mainly on the grounds of cost. To obtain an adequate intensity of illumination may require several hundred watts of filament lighting, which is equivalent to leaving on every light in the house!

How much light is required, and for what duration, is a question often asked. There is no simple answer to this. A number of formulae are to be found in books dealing with aquarium management; none agrees with the other and the calculations often make use of lumens (light output of the source). The luminous value of various sources can only be known by consulting specialist tables which are not readily available. So many factors affect the matter. The position of the tank in relation to daylight, depth of water, plant density and species of plant, colour value of the artificial illumination, and even the seasonal changes of light has an effect. I prefer to approach the matter from a decorative angle. Choose the intensity and colour of light which pleases aesthetically and then regulate the period of illumination to achieve balanced conditions.

For larger aquaria fluorescent lighting will probably be chosen. This will involve the use of a choke or a ballast unit and starter switch. The former items are required to limit the current through the tube and to provide an inductive starting kick to initiate the 'striking' of the tube, which causes the gas particles in the tube to ionise. The electrically charged particles strike the inner tube wall coating causing it to fluoresce, thus converting the energy into light.

Fluorescent lighting equipment is obtainable in three forms: self-contained units where only the mains connections require to be made; a ballast unit incorporating a starter in the ballast body and to which the lamp and mains connection have to be made according to instructions; separate ballast or choke unit and a separate starter switch and holder, all of which have to be wired together.

Some aquarists may be puzzled over the difference between a ballast unit incorporating a capacitor and a choke without a capacitor, particularly as they may have been led to believe that the more expensive ballast unit consumes less electricity—it does not.

At the risk of entering a technical field which may not be of interest to the reader, suffice it to say that what the capacitor does is to improve the power factor of the circuit and thus reduces the current, which is not the same thing as reducing the wattage. It is the wattage for which the consumer pays and not the current. This is not the place to go into the advantages of improving the power factor; they are negligible for the aquarist burning one or two low-wattage tubes, although collectively it is very much in the supply industry's interest to encourage power-factor improvement.

Other aspects of an effective aquarium lighting installation are the mounting of the equipment and the positioning of the light-source, be it tubular filament or fluorescent.

The essence of the matter is that it must be safe and should be neat. When fluorescent lighting is used, there is the alternative of attaching the equipment to the top exterior cover or raised type reflector, or locating items of equipment externally to the aquarium. The former only involves a twin mains lead, the latter involves two twin leads for the lamp connections, which should be of the shrouded flexible plastic type moulded on to the leads. These are much to be preferred to the circular hard plastic connectors, which are not intended for aquarium use.

If, for neatness, the wish is to house the equipment at the rear of a raised reflector shade, consideration should be given to the weight and heat production of the ballast unit. This method of housing is definitely not suitable for the plastic aquarium covers that are now appearing on the market. The ballast units can weigh several pounds and develop a temperature of 80°C.

The reflector, if it is metal, must be earthed, and it is essential to fit a condensation cover between the water surface and the shade to prevent the moisture from condensing on the lamp leads and connectors. All connections made to terminal blocks should be sealed with insulating compound and the wiring clipped

with small nylon clips, readily obtainable from Woolworths, so that the leads do not dip into the water when the condensation cover is removed. Nylon-covered tube clips are also available. These are preferable to the chromium plated ones usually supplied, which quickly rust.

Often insufficient attention is given to the optimum positioning of light sources, particularly in larger aquaria where a wider choice is possible. There are two conflicting requirements which have to be reconciled for effective decorative lighting. The fish are better illuminated when a forward light-source is used. Back illumination produces a shadowy effect, silhouetting the fish against the light, to the detriment of their appearance. On the other hand, if it is required to maintain the aquascape of a show tank, the plants should be illuminated from the rear of the tank, otherwise in a week or two the plants grow forward, altering the whole of the carefully contrived perspective. The arrangement which has been proved in practice is to use two sources and obtain the best of both worlds: a Gro-Lux tube at the rear and a warm-white fluorescent adjacent to the front panel.

As mentioned earlier, it is by no means a simple matter to achieve a correct balance of light-intensity, colour rendering and duration; experimentation may be required over an extended period to obtain the desired results. A time-switch is essential. Without one it is hardly possible to begin in a serious manner. The time-switch should be regarded as an aquarium tool rather than for simply switching on and off the tank when the family are on holiday. A period of illumination should be chosen depending upon whether the condition of the tank indicates that there is a deficiency or an excess of light.

The time-switch should be altered weekly by extending or diminishing half-an-hour periods. By this means it is possible to so regulate the light-period that no excess of light-energy is available to promote algal growth on the glass, rocks and plants, and yet there is sufficient light to promote a healthy slow growth of foliage.

By treating time and light-intensity as the main variables, it is possible to establish a satisfactory ecological balance which is at the same time aesthetically pleasing.

# The AQUARIUM SHOW

## 1970



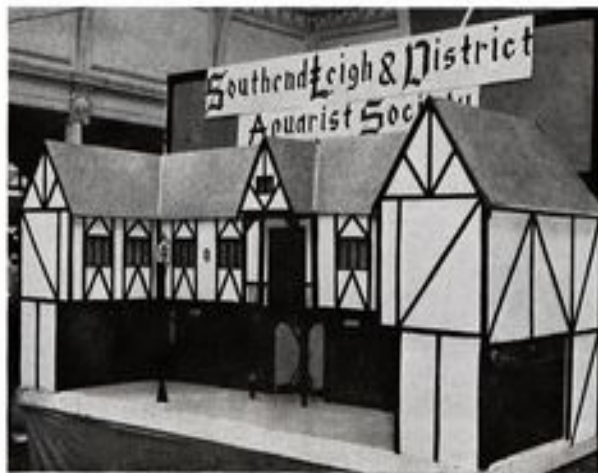
NEARLY 10,000 people, including many visitors making journeys from Canada, the States, Germany and Italy specially for the occasion, saw The AQUARIUM SHOW '70 in London. The appearance of the Editor of PETFISH MONTHLY on the children's TV programme 'Blue Peter' the same week made stars of two exhibits—the scorpion fish and FFS's own 'Clarry' (*Clarias batrachus* to you). Among several other exhibits joining these as show-stoppers were Hijack the turtle, who had survived hijacking by sky pirates earlier in the autumn and had been brought to the SHOW by its present owner, Mr N. Dixon of Aqualand, Torquay, and the snakes and poisonous frogs that the British Herpetological Society, newcomers to the SHOW, had on view on their stand.

The presence of the manufacturers of fish foods and equipment does a service to the hobby as well as being a commercial venture for them. Who better to question about a product than its producer; where better to be able to compare and steece away information for future needs than at the SHOW? Fantasy, Fish-E-Quip, Phillips, Spratts, Tetramin and Trophy foods were all represented and the manufacturers of Windmill, Trophy, King British, Inter-Pet, Hykro, Fish-E-Quip and Fantasy Products were there to demonstrate their latest products. John Gifford and T.F.H. Publications as well as the FFS stand had a

wide range of books to sell and there was a fine selection of tropical and coldwater fishes from Eastern Aquatics, Hayes Aquatics, Tachbrook Tropicals, Bekay Tropicals, Palace in Wonderland (with Dollis Hill Fisheries making their business debut at the SHOW) and Neal's Pet and Garden Centre. The vast selection of coral available from Mr L. Sarogny was sold down to the last piece!

Among the many individuals who deserve a rousing cheer for putting the aquarium hobby 'on the map' by

Bracknell A.S. Tableau won the Calgary Trophy shown above. The old inn scene of Southend, Leigh & D. A.S. (below) was placed second





Hemel Hempstead A.S. took third place in the Tableaux section



A group of the major challenge trophies up for award at The AQUARIUM SHOW 1970



Visitors to the SHOW from Germany, Herr G. Cattanach and Herr M. Blum (extreme right), talk to F.B.A.S. council members Mr Harry Towell (left) and Mr Tom Glass and the Editor of PFM (centre)

their efforts at The AQUARIUM SHOW, the organisers would like particularly to thank Mr F. Campbell, Mr M. Carter, Mr L. Emsden, Mr G. Greenhalf, Mr C. Harrison, Mr D. Holleyman, Mr J. Kelly, Mr S. Mooney, Mr S. Tarrant, Mr C. Walker, Mr C. Withers.

Thanks are also due to Mr M. Harth and Mr M. E. Roche for special support and to Tachbrook Tropicals Ltd who kindly loaned vivaria for the use of the British Herpetological Society.

## Displays and Personalities

'I'm Only Here For The Beer,' read the wording on the visiting little chap's miniature bowler, but after I had stopped chuckling I paused to marvel at just what it was exactly that caused us all to turn up at The AQUARIUM SHOW 1970.

'Third time does it!' they say, and this was certainly true of the Society tableaux. Every single one of the 17 entries in the third AQUARIUM SHOW was first-class. We knew we had some expert fishkeepers in our midst but who could have guessed at the wealth of artistic talent available. The painted backcloths alone would have done justice to an art exhibition.

Fresh from their triumph of last year, **Bracknell A.S.** maintained their winning streak with a superb 'Japanese Garden' complete with waterfall and pagoda; you could fairly smell the cherry blossom. Members told me that it started out as a display based on the willow pattern plate and it had taken 3 months to make. I was allowed to peek beneath those oriental robes to verify that even the models had been hand-made by the Society. Who would have thought those painstakingly designed dresses hid wooden blocks? The faces and limbs of the dolls were modelled from plaster of Paris. The tableaux designers had even gone to the Japanese Embassy to ensure the accuracy of the Far Eastern characters!

A close second came the large coaching inn from **Southend, Leigh and District A.S.** The only criticism I heard of this superbly constructed tavern was that the forecourt of the inn was a little bare. Little did the critic know that a stagecoach built to stand there had been damaged on the trip up. All that remained were the wheels tucked away under the entrance porch.

With pollution of the world making news, **Hendon A.S.** hit us





hard with their 'Our Dying Planet'. Nice touch (taken up by the National Press) was the mirror bearing the words 'you are now looking at the world's most dangerous animal'.

Third award winner was the jungle village presented by **Hemel Hempstead and District A.S.** The most authentic recorded tropical sounds emanating from it would I know bring nostalgia to any jungle hunter and certainly lent terrific atmosphere to the reed huts beautifully created on stilts in a realistic swamp. The 'Beware of Alligators' sign gave children visitors much pleasure albeit to the concern of parents! The 'gators were there, too—all 12 inches of 'em!

Two tableaux were each mainly the work of just one individual. The well-painted bar and Andy Capp cartoon was the art of John Driscoll, member of the **Independent A.S.** Further along the hall 'The Guppy Family Tree' on the **South London, F.G.A.** display was the result of a solo effort by new member Iain Smith, who must be given the distinction of being the

**Tableaux by Runnymede A.S., Hendon A.S., Portsmouth A.S. and Apex A.S.**

only man who has both designed and erected a tableau entirely on his own.

The exotic tent constructed by **Basingstoke A.S.** looked 'full of Eastern Promise' and the attached pen sketches of various well-known aquarists by Harry Gough and Mervin Strange caused some chuckles. If they throw you out, lads, you can always pawn all that jewellery and re-build the shelter!

**Billericay A.S.** went into the shipbuilding business with the 'Mayflower'. The very good reason for their choice was that not only is 1970 the 350th anniversary of its sailing but Governor Christopher Martin in command was a Billericay man. (But did those early Pilgrims really sail across an ocean of methylene blue?)

**Ealing and District A.S.** presented 'A Bad Case of Aquaritis'

that caused the adrenaline to flow so realistic was the bloodstained victim of this new disease. First-timers at the SHOW, **Vauxhall Motors A.S.** produced a very professional Viva car, the aquaria occupying the windows, providing the fish with a grandstand view of nearby **Hampstead A.S.** who captured that Saturday afternoon passion with a football match setting for their tanks.

From the educational exhibits like the **Portsmouth A.S.** 'Going Metric' and **Runnymede A.S.** 'Shipping Fish', to entertainment with **East London's** 'Showtime' every tableau was a work of art and the details were magnificent. **Apex A.S.** built a large chalet against a pine-forest background with a garden complete with chopping block, axe and logs ready cut for the fire—the whole forming a sight to gladden the heart of any youngster at Christmas.

**Uxbridge A.S.** showed how our aquarium fishes are captured, with model fishermen netting tropical lakes. **Tottenham A.S.** used a neat construction to set off their collec-



tion of furnished tanks—they had in fact staged it in the north of England a few weeks earlier. Sad news for us at the SHOW was that Tottenham member Sean Mooney is leaving to live in Ireland—everyone will miss this lovable man and the hobby in England will be the poorer for his departure.

All in all the Tableaux, it must be said again, were excellent; the losers in the contest had the consolation of knowing that they had lost against a very high standard.

Specialist societies pushed the boat out. *POECILIA RETICULATA* was a huge river steamer kept ship-shape by members of the **Fancy Guppy Association**, and if all this was too much for you you were invited to doff your shoes and relax in the comparative peace of the **Goldfish Society of Great Britain's** walk-in Shinto Temple with its orandas, celestials, brambleheads and all the more exotic varieties of the goldfish.

The **British Killifish Association** and adjacent **British Ichthyological Society** displays were well manned with enthusiasts eager to sign you up and show you what they had to offer. Among the colourful tanks of killies staged by the B.K.A.

Tableaux staged by Uxbridge A.S., East London A. & P.A., Independent A.S. and Basingstoke A.S.

was a new *Aphyosemion* species collected in Africa on behalf of the B.K.A. by member David Blair, and which is to be named *A. seymouri* (Blair, 1969) in honour of the late Ted Seymour, the B.K.A. technical editor. Crayfish, stone-loaches, tench, rudd, gudgeon, minnows, an eel and a huge pike were among the denizens of tanks on the B.I.S. display.

One cannot discuss The AQUARIUM SHOW '70 without mentioning the many wonderful people it is a pleasure and privilege to meet there each year. Constantly at the show secretary's side was Clive Walker. Not just content with entering fish, this young fellow worked long and hard as Gerry Greenhalf's side-de-camp. One of the chief stewards, Charlie Withers from St Albans, was telling me about his trip to Alaska, where he lectured to the Anchorage Society and was so convincing that they have applied

for affiliation to the Federation membership. Heaven knows what they will do when he pays them a second visit in February for their 'Fur Rendezvous'.

The SHOW has always boasted its overseas visitors and this year was no exception. Two particular transatlantic visitors were M. Strokal from Key West, Florida, and Mrs S. Williams from 'The Fish Room', Toronto. Paying their third return visit was George Cattanach and his wife with a party of friends from Germany. Aquarists from Sweden, Italy and Spain also introduced themselves.

To the myriad of folk space does not permit my naming, our thanks for providing my colleague Fred Campbell and myself with such a show of enthusiasm. As we sat on the train heading back up north I said that this year's SHOW will be hard to equal. But then, after I have written that, no doubt The AQUARIUM SHOW '71 will see the same folk making me eat my words! My answer must be, after all, 'I'm Only Here for the Folk'—I see enough of the fish all the year round!

J. KELLY

## All the Winners

THIS year a new system of judging was adopted for the Society Tabloids: the clubs entering the competition were themselves responsible for the choice—and once again the skill and ingenuity of BRACKNELL A.S. won for them the highest number of points (26), the first prize of £25 and the Calgary Trophy. Second were SOUTHBEND, LEIGH & D.A.S. (21 points, £15) and third BEMEL, HEMPSTEAD A.S. (14 points, £10). Fourth place was taken by HENDON & D.A.S. with 10 points.

A *Chesopoma kingleyae* entered by Mr S. Cowell of Bethnal Green A.S. was awarded the Scaeco Challenge Trophy for best fish in the show by judges Mr B. Baker, Mr C. A. T. Brown, Mr G. Goodall, Mr E. R. Nisall, Mr K. Nutt and Mr J. Stillwell. The individual competitor with the highest number of points, Mr G. Greenhalf of Kingston A.S., was awarded the Pet Library Points Trophy (2, Mr. A. Blake; 3, Mr S. Tarrant), and Kingston A.S. received the Taylor Smith Cup for the Society with the highest number of points (2, Bethnal Green A.S.; 3, F.G.A. Radlett). For the third year in succession Uxbridge & D.A.S. were awarded the T. Horemans Rose Bowl for the best furnished aquaria. Other special trophies were awarded as follows:

T.F.H./Miracle shield for best livebearer, Mr G. Greenhalf (Kingston A.S.); the Kinnell trophy for best labyrinth fish, Mr S. Cowell (Bethnal Green A.S.); the Inter-Pet trophy for best catfish (any variety),

Mr D. W. Armour (Riverside A.S.); the Eheim trophy for best tropical egglayer (class M), Mr P. W. Arnold (Bethnal Green A.S.); the F.B.A.S. Council trophy for best breeder's entry, Mr G. Greenhalf (Kingston A.S.); the Trophy Products trophy for best male guppy, Mr H. Gunaratne (Radlett F.G.A.); the F.G.A. Cup for best female guppy, Mr Redford and Mr Ballard (Radlett F.G.A.); the PETFISH MONTHLY trophy for best barb, Mr S. Mooney (Tottenham A.S.); the Rena trophy for best egg-laying toothcarp (class F), Mr S. Tarrant (Hendon A.S.); the Pengilly trophy for best swordtail, Mr G. Greenhalf (Kingston A.S.); the Halvin Cup for best characin, Mr E. T. Davison (Isle of Wight); the Boughton trophy for the best goldfish (classes U and V), Mr V. Voysey (Salisbury A.S.); the Marsh trophy for the best cichlid (classes D, Da and Db), Mr W. M. Waterman; the Longlife (U.S.A.) Plaque for best loach, Mr M. Carter (Bracknell A.S.); the Longlife (U.S.A.) medal for the best coldwater fish (other than goldfish), Mr V. Voysey (Salisbury A.S.); the PETFISH MONTHLY trophy for best danio, Mr K. Appleyard (Thurrock A.S.); the Tetramin award for best rasbora, Mr P. W. Arnold (Bethnal Green A.S.).

Society furnished aquaria: 1, Uxbridge A.S.; 2, Tottenham A.S.; 3, East London A.S.; 4, Runnymede A.S. Barbs: 1, Mr S. Mooney (Tottenham); 2, Mr A. Blake (Basingstoke); 3, Mr P. W. Arnold (Bethnal Green); 4, Mr S. Cowell (Bethnal Green). Characins: 1, Mr E. T. Davison (Isle of Wight); 2, Mr I. T. Mathison (Toorbridge); 3, Mr T. J. Summers (Uxbridge); 4, Mr J. Gower (Bethnal Green). Cichlids: 1, Mr W. M. Waterman; 2, Mrs M. Netherhall (Riverside); 3 and 4, Master A. Withers (Mid-Herts). Angels: 1, Mr R. Bowen (Independent); 2, Mr R. C. Mills (Ealing); 3, Mr R. C. Burton (Freetown); 4, Mrs M.

Netherhall, Apinngamma, Pylamachoni, Nannacara: 1, Mr D. V. Lusher (Mid-Herts); 2 and 3, Mr A. Blake; 4, Master A. Withers. Labryosche: 1, Mr S. G. Cowell (Bethnal Green); 2, Mr G. Greenhalf (Kingston); 3, Mr A. Blake; 4, Mr E. T. Davison. Siamese fighters: 1 and 4, Mr F. H. Vicker (East London); 2, Mr J. Gower; 3, Mr C. Wood (N. Kent). Egg-laying toothcarps: 1, Mr S. G. Tarrant (Hendon); 2 and 4, Mr N. Roberts (Kingston); 3, Mr R. Longstaff (Kingston). Tropical catfish: 1 and 4, Mr G. Greenhalf; 2, Mr S. G. Cowell; 3, Mr P. Shrimpton (Arson). Corydoras and Brocks: 1, Mr D. W. Armour (Riverside); 2, Mr T. D. Smith (Brent); 3, Mr P. Wilson; 4, Mr D. V. Lusher. Rasbora: 1, Mr P. W. Arnold (Bethnal Green); 2, Mr P. W. Brindley (Bethnal Green); 3, Mr T. F. Butler (Arson); 4, Mr E. G. Harvey (Hampstead). Danio and White Cloud Mountain minnows: 1, Mr K. Appleyard (Thurrock); 2, Mr M. Carter (Bracknell); 3, Mr J. Hatton (Thurrock); 4, Mrs G. Carter (Bracknell). Loaches: 1, Mr M. Carter; 2, Miss K. Tate (Nonsuch); 3, Mr A. Blake; 4, Mr T. F. Butler. A.O.S. tropical egg-layers: 1, Mr P. W. Arnold (Bethnal Green); 2, Mr G. Greenhalf; 3, Mr M. Harth (Independent); 4, Mr T. Summers.

A.S. male guppy: 1 and 4, Mr H. Gunaratne (Radlett F.G.A.); 2, Mr L. Smith (Radlett F.G.A.); 3, Mrs M. Netherhall. A.S. female guppy: 1 (joint), Mr Redford and Mr Ballard (Radlett F.G.A.); 2, Mr H. Gunaratne; 3, Mr R. Bowen; 4, Mr R. Green (Hampstead). Swordtails: 1, Mr G. Greenhalf; 2, Mr T. J. Summers; 3, Mr J. C. Baines (Vauxhall Motors); 4, Mr K. Quirell (East Dulwich). Platys: 1 and 4, Mr J. G. Little; 2, Mr R. Bowen; 3, Mr R. W. Brindley (Bethnal Green). Molli: 1, 2 and 4, Mr G. Greenhalf; 3, Mr J. Howe (Arson). A.O.S. livebearers: 1 and 4, Mr A. Blake; 2 and 3, Mr G. Greenhalf.

Singletailed goldfish: 1, Mr V. Voysey (Salisbury); 2, 3 and 4, Mr D. E. Goodbody (Walthamstow). Twinstail goldfish: 1, 2 and 4, Mrs G. Longstaff (Kingston); 3, Mr T. D. Smith. A.O.S. coldwater fish: 1 and 2, Mr V. Voysey; 3, Mr B. T. Mather (Walthamstow); 4, Mr V. Hunt (Petersmouth).

Results of the breeder's classes were as follows: Egg-layers: 1, Mr S. Tarrant (Hendon); 2 and 4, Mr A. Chandler (Walthamstow); 3, Mr Charnock St. John (Mid-Herts). Guppies: 1, Mr L. Smith; 2 and 4, Mr P. Morjarty (Radlett F.G.A.); 3, (joint) Mr Redford and Mr Ballard (Radlett F.G.A.). Livebearer: 1, 2 and 4, Mr G. Greenhalf; 3, Mr R. Mooney (Tottenham).

## Transatlantic TOPICS

LIKE that three-course luncheon eaten aboard ship, inside filters have the annoying habit of not staying down! One solution is to place a goodly number of glass marbles in the bottom of the box, but since today's kids seem to have forsaken this in-game of our youth, the substitution of gravel is quite in order.

North American hobbyists tend to use the fine compost for this purpose, some even use silver sand. This is all right provided that you remember to clean the filter 'weights' at the same time as you change the filter material such as wool or

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By JIM KELLY

carbon. All it needs is a good flush under a swift flowing tap.

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Dr Greenburg, of Everglades Aquatic Nurseries, Tampa, Florida, is an undisputed authority on aquatic plants; no armchair scientist but a man who has been around plants and their care all his life.

His reason for why so many aquarists fail with their plants is that most of the specimens offered for sale are not well-adapted to the conditions existing in the home aquaria. They are often grown by the dealer in totally different environments and conditions to bring them to good size as quickly as is possible.

These methods do not apply to Aquatic Nurseries—all the plants at Everglades are cultivated under partial shade—Dr Greenburg found that plants grown in full sun don't usually adapt to the confines of the home fish tank. As a growing medium he uses unwashed builder's sand, though he is the first to admit this is not the compost most conducive for plant growth it is the



closest he can get in quantity to the aquarium compost they will inevitably finish up in.

\* \* \*

Like some contemporary H. G. Wells or Jules Verne, the well-known betta expert, Walt Maurus, may be following in the footsteps of these 'prophets' when he writes: 'The development of the *Betta splendens* may, to some degree, exhibit aspects of the change that has taken place in the goldfish. Body and fin proportions are changing. Shortened bodies, enlarged and multiple finnage are beginning to show themselves. Use your imagination to picture the fighters of the future. In red, blue, green or combination of these colours sporting a variety of finnares. Too far fetched? Just hang around—you may be surprised!'

Already many betta breeders are taking steps to make Walt's predictions come true and I have personally seen fish in the States that made my eyes stand out like chapel hat pegs. I hope my friend Walt gets his wish; it should certainly make the followers of the goldfish and fancy guppy look to their laurels in the popularity stakes.

P.S. No sooner had I crossed the last 't' and dotted the last 'i' on this paragraph when I received an advanced copy of Walt Maurus' new book: *THE BETTA SPLENDENS, A BREEDER'S PRIMER*. Apart from all the information the fighter enthusiast requires it has a new novel feature for any book—you stick in your own pictures of the bettas, a full set being available from the author. All enquiries (it sells for 2 dollars in the States) to Mr Maurus, 10068 Cavell, Livonia, U.S.A. 48150.

\* \* \*

Marine importers from San Carlos are bringing fresh hopes to those marine buffs scattered throughout the world who have lost fishes soon after buying them from the shops. In the past, too many of these fishes were shipped out from the collectors in the Pacific and straight into the dealer's tanks, more often than not still charged with parasites and disease. Usual result was that these fishes, despite the high prices charged, soon succumbed in the hobbyist's aquaria, victims of wanton neglect of simple hygienic principles.

Now, Marine Importers Inc.

board all fishes for periods up to 30 days, during which time they are kept in water treated by ultraviolet rays. During this quarantine period a scientific prophylactic programme is carried out—treatments by formaldehyde and controlled copper sulphate rids the fishes of many of their unwanted inhabitants. The copper level is automatically maintained by a sophisticated device called a colorimeter spectronic scanner. This meticulous care obviously is reflected in a slight increase in the purchase price of the fish to the public.

\* \* \*

Sixty miles east of San Francisco lies the port of Stockton, notable in the piscatorial world because it is home of the Aquatic Research Institute. Here we have an independent, non-profit-making organisation devoted to research and education in the aquatic sciences. Its library is one of the few archives in the U.S. devoted principally to the hobby and it is always open to the public.

Now they are appealing to fish-keepers throughout the world to send them back issues of aquarium society bulletins, newsletters, notices, magazines and books. All countries and in all languages. If you can help then please send your contributions to the Librarian, Aquatic Research Institute, P.O. Box 648, Stockton, California 95201, U.S.A.

Your actions would help the hobby and bring a smile to the face of the wife, who would welcome all that 'extra' room in the attic!

\* \* \*

If there is ever a world record awarded to the enthusiast who has travelled the greatest distance overland to attend a guppy show it must surely go to Bob Isherwood from British Columbia. Some years ago he covered some 2,000 miles to bench his fish.

Not only is Bob a keen showman but he is also an honest one. The question whether an aquarist should

show fish he hasn't bred himself is a hotly debated one and has even resulted in such statutory strait-jackets as the '28-day-ownership before showing' rule.

Mr Isherwood has his own answer to the question. Recently he acquired some nice golden guppies from a fellow hobbyist, Frank Samp, and, entering them in a local show, won a trophy for them. That prize is now proudly displayed in—you've guessed it—Frank's living room.

The guppy cannot talk, spell, hasn't even written to THE TEAM, but if it could I am sure it would verify that the Bob Isherwoods of this world have made this hobby such a wonderful one to be a part of. Bob, I doff my cap to you.

## What's New?

### Freeze-dried Food Mix

FREEZE-drying is a process that has been used for making usable preparations of live foods for aquarium use, but until the advent of the new **Phillips Multifreeze** no formulated compound fish food has been prepared by this technique. Ordinary drying procedures change foods quite a lot, of course, and can lead to loss of vitamin content, whereas freezing of foods produced the big problem of keeping the food frozen up to the time of use. Freeze-drying gets rid of both these major disadvantages and results in a product with an almost indefinite storage life that is, but for the absence of water, just like the original and very closely the equal in food value of the natural material. Multifreeze contains mae, shrimp, ox heart, liver, egg, spinach and lettuce, all in freeze-dried form, the total analysis giving a minimum protein content of 60%. Its particles are of various sizes with good floatability and, most important—it has fish appeal! Price is 25 6d.

**WINCHESTER @ D.A.S.** are anxious to recruit new members and extend an invitation to interested fish-keepers in the area to contact secretary Mr John Cairns, 4 Hiltisbury Close, Chandlerford, to obtain details of meetings.



# GUPPY

## World

THOSE of us who use the type of filter incorporating a filter medium know what a messy business changing the carbon can be. Apart from the granules sticking to everything they can also find their way into the pump impeller on the larger filters and stop the magnetic drive, necessitating a complete breakdown and clean-out of the filter.

One way out of this dilemma is to place your carbon in small bags made from old nylon stockings or nylons—any porous material in fact that will let the water through but not the carbon.

Not only does this 'sachet' method keep the granules in one place but it cuts down the time consumed in carrying out this regular chore. The size of bags used will vary with the different types of filters used.



For many years aquarists regarded the 'conditioned' water in their tanks as more precious than gold. They would willingly part with their fish but diled the water out in which you carried them off in like my tank manager doling out loans. I have even known cases where guppy breeders had put back into the tank water they had just removed during a service, filtering it through a piece of cloth to remove the suspended matter.

Today, partial change of water is considered sound practice. And though most agree it should be done quite a few are still a little hazy as to why.

Though there are many good reasons the main ones seem to be: it slows down the hardening of the water resulting from evaporation; it helps to remove organic and other waste products of metabolism and it replaces any trace elements or other essentials that may have been used

up by both the fish and plant occupants.

And for those guppy folk who regularly practise change of water there is yet another reason—the guppies love it!



As is the current custom, overseas guppies entered in our shows are auctioned off after the event, the proceeds going to the host society. This means that many varieties, for so long as closely related as a pack of hunting hounds, are now finding new partners, new surroundings and strange diets.

By **PETER UNWIN**

One result of this exchange comes from some British guppies entered in the Southern California Show last year. Though small in overall size when compared to their American competitors, those U.S. breeders who took the fish home after the show have been expressing amazement at the way these fish have grown.

With so many variables to consider, finding out why this should be is not an easy matter; in fact it is an almost impossible task to explain it with any certainty. Yet inquiries have revealed one common denominator: the Californian breeders make more use of natural light than we do.

Could sunlight be the reason? Knowing what a change of scene does for our figures, especially if we have been sunning ourselves during the holidays, it could be a feasible proposition.

Number one in the popularity charts at the moment seems to be the variety referred to as the 'king cobra', not to be confused with the snakeskin and leopard that have been bred on this side of the Atlantic for many years. Though many breeders are starting with good cobra parents they are often disappointed to find that the progeny lose the attractive body markings.

Looking like the Colgate girl that had just discovered the 'ring of confidence', one guppyatic enthusiastically explained to me why this was happening. To cut a long story about genetics sideways, our breeder claimed that the grey body coloration was in some way suppressing the body patterns.

He had arrived at this conclusion when attempting to breed these guppies and discovered some gold fry amongst the F<sub>1</sub> generation. When these were fully sibbed (crossed brother to sister), fish were produced with their full complement of cobra patterns—crossing their grey relatives again produced plain guppies. Have any of our readers experienced the same happening?



If you have recently purchased a new heater, pump or 'stat for your guppy tanks you will have noticed that the old red and black wires have gone and in their place are the colours brown and blue with, in equipment requiring an earth lead, green and yellow.

This change over towards a common standard has been mentioned before in the pages of *PFM*, but as the subject is still causing some confusion amongst aquarists it's worth repeating the meaning of the new colour code: brown is the live wire, blue the neutral and green and yellow the earth.

Though at first sight the choice of colours seems odd (don't we usually associate 'brown' as an earthy colour?) the choice was sound. Green was already widely used as an earth but a single colour is not safe enough since getting the earth connection wrong could result in

electrocution. Then the wire had to be recognisable by folk with defective colour vision—hence the two colours now used.

As for the blue and brown these

were two of the few colours not already being used. Don't be misled into thinking it doesn't matter because the equipment works no matter which way round you connect

the brown and blue wires. Only those with their feet firmly planted in mid-air are foolish to ignore anything that makes this fine hobby safer.

# Guppy Types

## No. 5: The Swordtails

THE three swordtail varieties, double, top and bottom, were early starters in the Standards stakes, originating in Austria and Germany from mutations with splinter-like caudal extensions. In fact, early imported wild stock from the West Indies often contained 'lower swords'.

At first the guppy specialists thought these fish were hybrids, but as more and more were produced, the fish gained favour and all three

generally appeared limp in comparison with others, the early rules demanded that the fish should hold their caudal fins parallel to their bodies. Modern specialists, realising that for the lower sword this wasn't a natural position, have changed the standard so that the caudal extension gently slopes away from the body at an angle of approximately 10 degrees.

Obtainable in almost every colour

tend well beyond the junction of the body and tail. British versions show the extensions of the caudal fin to be straight whereas the American versions often have highly coloured and wavy fins. One variant on our double sword was shaped like the claw of a crab and given the name 'scissor-tail'.

During the early sixties an amusing interlude occurred when certain guppy specialists objected to the term 'bottom' and suggested that it should be changed to 'lower'. After much discussion the former term won the day and it is this that is now used in modern Handbooks.

Though swordtail guppies are often thrown out of veil or delta stock, many of the early breeders claimed that the best fish were produced when using the clear-finned, roundtail female. Of all three varieties, top, bottom and double, the top sword is the rarest.

Swordtail varieties have provided a source of wealth for the guppy experimenter and a challenge equal to any the broadtails have thrown out. Perhaps some day we shall hear



Bottomsword guppy

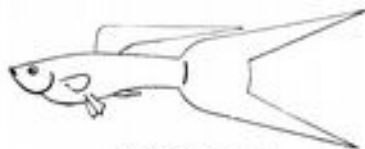
types figured in the first published, pre-World-War 2 outlines. Main differences from the contemporary types appear to be in the shape of the extensions. The early swords were sausage-like, without the splinter precision of modern-day fish.

Today the swordtail guppy varieties have lost favour to the broadtail guppies but a good double sword, with its extending filaments well spread and of equal length, is still an impressive sight.

Single types were never as popular as the double. As the extending caudal filaments of the top sword

variety, a green strain of swordtail from Vienna was extremely popular, even if the colour did show itself only when the fish reflected the light from certain angles.

All three types of swordtails sport long tapering dorsal fins that ex-



Doublesword guppy



Topsword guppy

the cry 'Up Swords and at 'em', and know that the wheel has made a full turn.

J. K.

Illustrations are reproduced with permission from the F.G.A. Standards Handbook, which is obtainable price 5s (post free) from the secretary, Mr F. Campbell, 37 Cardigan Drive, Bury, Lancs.



# The Poor Relation

**An experienced hand in coldwater fishkeeping takes a look at the current state of the hobby and suggests possible ways of remedying the decline of the coldwater hobby**

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By T. L. DODGE

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RECENTLY, whilst I was cleaning around in my fish house, my thoughts, as is their wont, went off at various tangents in a review of the hobby of fishkeeping and some of its aspects. Inevitably I went back quite a few years; in fact, to several years before World War 2, when the coldwater hobby was so predominant.

I thought of some of the old faces and personalities who were leading lights in the hobby in their time—individuals who were masters of the art of breeding and rearing marvellous specimens of coldwater fishes; characters whose hard work and enthusiasm for the hobby did so much in raising it to the very high standard and esteem it once held. Yes, that was it—'once held'.

It suddenly hit me like a douche of ice-cold water on a hot summer's day. I have known for a long time that we coldwater people are outnumbered in the hobby, but have paid it scant attention. After all, what is there to worry about? The coldwater side of the business requires 'real knowledge' and there are quite a few aquarists around who qualify.

I again thought of those old faces who have gone for ever, and tried to recognise the younger ones who have taken their places. There aren't so many of them, are there? Whatever way I think around it, it's pretty clear we're losing 'em quicker than we're picking 'em up. Take London, for instance: how many coldwater experts can the capital boast of (the real top-notchers, I mean)? Four? Yes, and that's stretching it a bit. Take the West Country: how many down there? Another four? Take the Midlands, allow them four—and another four for the North. Sixteen altogether and we've covered the country. Now compare this number with the top-notch tropical boys in the same areas and we come off a poor second best. Twenty years ago we could boast a large majority of coldwater aquarists; today the tropical fancy outnumber us by about ten to one. So what's gone wrong, what's the answer?

Well, let's take it logically and objectively. Is there anything really wrong with the coldwater hobby? Of course there is, but the fact that we are outnumbered by the tropical fancy is the logical outcome of our present way of living and the environmental circumstances surrounding us. We can do nothing about this so long as we have a rapidly increasing population that means we have to be cooped up in small box-like flats and similar abodes offering very little breathing space and even less room for our hobbies. Whoever heard of a successful coldwater aquarist who didn't have a fish house in his garden? But think how many successful tropical hobbyists there are who haven't a garden at all! Yes, we are outnumbered, with no hope of reversing the issue, but we can do a lot to improve our standing in the hobby, in situations wherein we do have some control.

A few weeks ago I was at a well-known open show when I was approached by a beginner in the hobby who wished

to purchase a pair of good-quality veiltails. The gentleman informed me he had visited a local well-known breeder and exhibitor who was also an official of the Society promoting the Show, but who was so off-handish that the enquirer had gone away both disappointed and disillusioned. Unfortunately, this is a very common occurrence between breeders and beginners—but it does considerable harm to the hobby and deters many young enthusiasts from joining the ranks.

A stock phrase of the breeder, when confronted in his fish house by a prospective buyer, is 'You won't find fish of this quality in the pet shops'. This is perfectly true, of course, but what a ridiculous admission! The tropical people must roar with laughter every time they hear it. Why shouldn't the pet shops stock good-quality coldwater fishes? Is this the prerogative of the breeder? Surely it would be for the good of the hobby if one could go to the local pet shop for a good show specimen? The tropical man does, and look where he is. No, the remedy is in our own hands, and unless we get our fingers out, we will always be condemned as 'The Poor Relation'.

Take our Competition Standards for coldwater fishes, for instance. We have aimed very high, and achieved a great deal of success, but have we been too ambitious and created a situation that very few are able to attain? Would it be more realistic if we set our sights a little lower and opened the doors for a greater influx of new blood? The Goldfish Society of Great Britain have done this and although we may not all entirely agree with them one cannot deny that their efforts are bringing a fresh flow of enthusiasm from the up-and-coming novice ranks. Maybe some of us are concentrating too much on standards that only the few are able to attain.

Perhaps we would be better employed creating some new specimens. One hears constantly of the new tropical specimens coming almost weekly into the country, but what new specimens can the coldwater people boast of? I have enjoyed the hobby since my first visit to an open show in 1929, and although there has been a commendable improvement in our standard of fishes since those far-off days, I have yet to see a fresh specimen established.

I can understand the interest felt by the tropical hobbyist when he sees a new specimen being imported, but this is happening all the time. Think then of the excitement and stimulation to the coldwater fancy if one of us were to produce, and establish, a new type of fish.

As I see it, the coldwater fancy consists of two factions: those who stick rigidly to line breeding, and those who cross their stock indiscriminately. Both factions are

indispensable to the hobby, and one is no more right than the other, nor no less wrong. But if we are to produce something new, it will most likely be the indiscriminate breeder who does it. Of course, the purist will look down his nose at the very idea of uncontrolled spawnings, but it's the strict line breeder who's got us where we now are, and I'm afraid I'm as guilty as anyone.

What I would like to see is some person, or organisation, put into trust a trophy, or reward, for the first aquarist who produces a new type of coldwater fish and establishes it over a period of three fish generations.

Think what a boost it would give the hobby, and the interest it would create. It shouldn't be too difficult, either; after all, practically every fancy fish in our fish house originated from mutation.

So there we are: there's nothing wrong with our side of the hobby that we can't put right. All it needs is a little more effort by everyone involved. There's heaps of enthusiasm, and a full quota of knowledge among our ranks. The material is abundant, and there is a huge untapped market of recruits waiting only for the right approach from the proper authorities. Let's get to it.

## Book Review

THE COMPLETE AQUARIST'S GUIDE TO FRESHWATER TROPICAL FISHES. Edited by John Gilbert and Raymond Legge. 249 pages, 430 illustrations. Ward Locke Ltd. £4.50.

FROM the time of Wm. T. Innes onwards, aquarists have been well served with textbooks and encyclopaedias of tropical fishes, ranging much in size, content and quality. So much so, that one might be forgiven for exclaiming 'Not another one!'. But the book now before me is not just another one; it is something special, so special that it is not much use my describing it. You have to see it to believe it.

To begin with, it is superbly produced. Immense care has obviously been lavished on the design and typography, the paper is of fine quality the binding strong and pleasing, while the litho printing is admirable. In the copy I have, the colour of every illustration is rich and true and there is nothing anywhere out of register.

As for the content, it gains immeasurably by being the result of good teamwork. Each section has been contributed by a specialist in his own field, the whole work unified by intelligent editing. The result is a generally reliable book by a dozen of the leading aquarists of our day, illustrated with splendid pictures by some of the world's best aquarium photographers.

After so much care and effort and capital has been expended for our delight, it seems churlish to criticise. But this is a critique and nothing is perfect; having been dazzled, as anyone must, by this lovely thing, it is my duty to don the smoked glasses and examine it more closely.

The photographs which give such splendour to this work place upon

it, at the same time, a handicap. For the best photographer in the world must have the living fish before he can make a picture and it is clearly impossible to bring together all the fishes known to aquarists in the time, place and condition necessary to photograph them. Moreover, the requirements of photography sometimes tend to put fishes off colour, though modern strobe devices have reduced this hazard. Knowing the difficulties, I have nothing but admiration for the manner in which so many species have been presented so beautifully. But the fact remains that many are absent.

Even though the text includes a number of species that are not illustrated, the list is very incomplete. Loaches, for example, are very sketchily dealt with. One feels that the word 'complete' could well have been omitted from the title, for it is unlikely that any aquarium book will ever be really complete.

One thing that calls for comment is the expenditure of text-space on descriptions of colour. This is only justified for those species (comparatively few) that are not illustrated. When accompanying good colour plates, accounts of colour are redundant—and in some cases confusing to the reader, for the description sometimes contradicts the picture. At the best of times the colours of fishes are difficult to describe, for so much depends on the type of light in which they are seen, the position of the light-source, the effect of the surroundings and the condition of the fish. Add to this the ambiguity of our language and of the readers' imagination and it would seem better to avoid description whenever possible.

There are a few errors in naming, as in all such works. *Aphyocypris pooki* (page 139) is only the Hong Kong variety or subspecies of the White Cloud Mountain minnow (*Tanichthys albonubes*). There has

been a muddle about this from the beginning and a fish previously thought to be *A. pooki* has had to be re-named *Hemigrammocystus lina*, poor little thing.

The puffer fish on page 229 is not *Tetraodon lineatus* but *T. palembangensis* and I must presume to differ about the scats, page 228, as I am sure the tiger scat is not just a variety of *Scatophagus argus*, having collected both in quantity; I think (on present knowledge) the tiger scat is *S. ornatus*.

There are some other instances but these matters can easily be corrected in the second edition and will be of small moment to any but the specialist. Certainly there are fewer errors of this kind than in most other works.

Leaving quibbles aside, this book should satisfy the needs of all who take their aquarium seriously. The whole thing is clearly laid out and classified, beginning with a practical account of basic principles and terminating with an up-to-date chapter on ailments and their treatment.

There is a really first-rate section on aquatic plants (though here I am sorry to find that horrid mongrel word 'Aquascaping' given prominence; why not 'Aquascenery'?).

As a really beautiful Christmas present this book should be high on the list, though it will wrench the heart to give it away unless you have one for yourself as well!

A.F.B.

REPRESENTATIVES of the G.S.G.B., Bristol A.S., M.A.P.S., M.A.A.S., F.B.A.S. and F.N.A.S. who met in July to discuss the new goldfish standards proposed by the G.S.G.B. were able to agree on all matters except those concerning the Bristol Danubian and the black moor; it is hoped that one further, final meeting will clear up all outstanding matters.





A 6½ pounds *Ophiopoma* belonging to Mrs Marion Tee of Worthing became the highlight of the **BRIGHTON & SOUTHERN A.S.** open show this year and local newspaper interest in its impending appearance gave the show much valuable publicity. Despite bad weather, over 1000 visitors attended the Show to view almost 500 exhibits, a record for the Society. Records were broken, too, on the door, raffle and catering receipts and the Society wish to thank all participants for helping to make the show the success it was. Mr Gerry Greenhalf won the best fish in show award (the Brighton Annual trophy) with his *Ctenopoma acuminata* but the big surprise of the day came when a cherry barb, entered by young Keith Williams, not only won in the barb section but was within two points of becoming fish of the show—surprising because this fish was one of a bag of fishes won by Keith in a raffle at Brighton Club some months earlier.

Only one disappointment marred the day in connection with the fish entries—the dreaded Ich chose that particular time to strike and many coldwater entries were unable to be exhibited.

Class winners were the following:

Barbs, 49 entries: K. Williams (J. Pelham Annual Cup, cherry barb, 84). Characins, 39: Mr R. Cooper (*Leporeus striatus*, 82). Cichlids, 22: Mr R. Kerridge (Texas, 82). *Aptinopoma*, etc., 28: Mr S. Crabtree (Whitington Annual trophy, *A. agassizii*, 80). Labyrinth, 42: Mr G. Greenhalf (Best fish in show, Brighton Annual trophy and F.B.A.S. Championship plaques, 86). Siamese fighting, 11: Mr C. Wood (78). E.T.C., 34: Mr H. Arncliffe (*Pseudorasbora parvifl.*, 82). Tropical catfish, 41: Mr T. J. Summers (*Channa striata*, 83). Corydoras and Brochis, 24: Mr E. F. Greenfield (*C. pictus*, 82). Rasbora, 33: Mr W. D. Hunter (red-line, 82). Danios and minnows, 30: Mr H. Maddison (giant danio, 82). A.O.V. tropical egg-layers, 11: Mr R. Kerridge (Siamese tiger, 82). Swordtails, 17: Mr P. A. Ganger (red sword, 78). Platys, 16: Mr R. Smith (sunset, 78). Mollies, 10: Mr G. Greenhalf (redline, 78). A.O.V. livebearers, 17: Mr J. A. Pollard (*L. reticulata*, 81). Breeders egg-layers, 11: Mr B. F. M. Humphries (Siamese gourami, 78). Breeders livebearers, 6: Mr G. Greenhalf (albino sword, 78). Individual furnished: Mr E. R. Nicholl (Dora Brown Annual trophy, 77). Coldwater, Class U and V, 1: Mr V. Hunt (sunset, 69). Tristichia, 1: Mr V. Hunt (blue, 78). A.O.V. coldwater, 12: Mr V. Hunt (ling fish, 81). Guppy, shreds, Best single guppy, Mr B. Elton (7). Crowcher Annual Cup; best single opposite sex, Mr D. A. J. Riley; best breeders team, Mr M. Scott.

**THE ENTRY OF 533 at the TORBAY A.S. Open Show** was almost double that of last year, whilst

visitors were so many that the Society ran out of programmes. Show stoppers were the tanks depicting the marine life of this famous resort and the poisonous lion fish from East Africa. There were 20 entries in the marine class, 47 entries in the sexed pairs class and a really good variety of fishes in the coldwater section, including pike, eels, river trout and sticklebacks. Judges Mr H. Towell, Mr D. Ellis, Mr N. T. Ryder, Mr Wigg, Mr B. Coombs and Mr R. Matley made the following awards to class winners:

Individual tropical furnished, Mr J. Bragg (Torbay); individual coldwater furnished, Mr G. Thompson (Torbay); ladies furnished, Mrs A. Dodd (Torbay); junior furnished, Master C. Tolcher (Torbay); Barbs: Mrs S. Gattrell (Plymouth), Characins: Mr C. Clark (Plymouth), H. H. & C.; Mr W. G. Gerrick (Lanterns), Cichlids: Mr W. Hooves (Plymouth), Angels: Mr A. J. Bull (Bradford-on-Avon), Dwarf cichlids: Mr J. Haynes (Torbay), Labyrinth: Mr E. Wilson (Bristol), Siamese fighting, Mr T. R. Davis (Torbay), E.T.C.: Mr B. Bowyer (Totnes), Tropical catfish: Mr C. Edmondson (Batter), Corydoras & Brochis: Mr F. Cox (Torbay), Rasbora: Mr M. Poole (Torbay), Danios and minnows: Master E. Woolley (Torbay); A.O.V. tropical egg-layers: Mr T. Jones (Weymouth), Sexed pairs: Mr J. R. Davis (Torbay). Guppies, male: Mr M. Gaylard (Yeovil), Guppies, female: Mr T. Woolley (Torbay), Swordtails: Mr R. Bull (Plymouth), Platys: Mrs A. D. Kirby (Plymouth), Mollies: Mrs O. Lay (Torbay), A.O.V. livebearers: Mr B. Bowyer (Totnes). Singletailed goldfish: Mr R. King (Torbay), Shubunkins: Mr D. Lardon (Yeovil), Twinstailed goldfish: Mr V. Collins (Yeovil), A.O.V. coldwater: Mr G. Thompson (Torbay), Hggs, mirror carp etc.: Mr V. Collins (Yeovil), Breeders tropical egg-layers: Mr M. Poole (Torbay), Breeders tropical livebearers: Mr R. King (Torbay), Breeders coldwater: Mr V. Collins (Yeovil), Marine, native and tropical: Mr L. Doubleday (Torbay).

The Hazelwood Perpetual trophy was awarded to Mr J. Bragg and the Lady Member Perpetual Award to Mrs A. Dodd. Miss K. Rendell won the F.B.A.S. Junior trophy and the Anabantidae (Doubleday) Perpetual trophy went to Mr E. Wilson.

**CLASS winners in the OLDHAM & D.A.S. Open Show** were as follows:

Guppies: Mr Duffy (F.G.A.), Mollies: Mr and Mrs Bewick (Middlesboro), Swordtails: Mr Brankin (Oldham), Platys: Mr H. R. McKenna (Nelson), Anabantidae: Mr B. Thomson (Oldham), Fishers: Mr F. Shackleton (Belle Vue), Small barbs: Mr E. E. Gregory (Oldham), Large barbs: Mr C. Stewart (Nelson), Small cichlids: Mr and Mrs Smith (Tip Top), Large cichlids: Mrs M. Davies (Belle Vue), Angels: Mr H. Lees (Oldham). Small characins: Mr Tonge (Oldham), Large characins: Mr and Mrs Beedison (Atherton), Rasbora: R. and A. Johnson (Aston), Danios and Minnows: Mr and Mrs Hogarth (Salford), Sharks and loaches: Mr Ashton (Independent), E.T.C.: Mr B. C. White (Leigh), Corydoras: Mr R. Davies (Belle Vue), A.O.V. catfish: Mr A. Baldwin (Nelson), Loaches: Mr E. C. White (Leigh), Breeders egg-layers: Mr J. Higgins (Oldham), Breeders livebearers: Mr and Mrs J. Breasley (Belle Vue), Pairs livebearers: Mr and Mrs S. Hoop (Belle Vue), Pairs egg-layers: Mr and Mrs Cobb (Belle Vue).

**BRIGHTON & SOUTHERN A.S.** have recently acquired from Mr J. Nail some really first-rate plant photographs and slides of fish. These have been made up into a series of interesting and informative slide/tape lectures and can be hired. For information on the hire of these lectures please contact Mr B. Sheldon, 45 Coventry Street, Brighton (phone Brighton 326842).

Fancy goldfish: Mr Whinney (Aurington), Common goldfish: Mr and Mrs Cobb (Belle Vue), A.O.V. coldwater: Mr and Mrs Miller (Belle Vue), A.O.V. tropical: Mrs J. Tonge (Oldham), Plants: Mr Davis (Surreybrook).

The award for the best fish in the show went to Mr F. E. Gregory (Oldham).

**VICE-CHAIRMAN of EALING & D.A.S.**, Mr Dick Mills, sends us the following news of the Society's activities: 'Ealing & D.A.S. had a very successful Open Show in October, entries totalling 455—a slight increase over the previous year. It was particularly pleasing that an Ealing member took best fish in the show award. Soon after the Show came The Aquarium Show 1970. The Society was unfortunate to be placed on the same plinth as Bracknell A.S., last year's winners, and it was no surprise when they did it again! Ealing's tableau was unplaced but it did get a mention in THE GUARDIAN! This disappointment was made up for by the Society's sole fish entry gaining a second place in the angel class.

John Batts, the Society's resident aquascape expert, gave a demonstration of his art recently, and plans are in hand to formulate rules for this class, which was very popular at the Open Show. The Society would like to take this opportunity of wishing all their aquarist friends and rivals a very Happy Christmas and best wishes for the '71 season.'

Round 2 results of the Three-Way match are: Riverside, 28 points; Ealing, 20; Runnymede, 12. Totals: Riverside 46, Ealing 41, Runnymede 33. Class winners at the Open Show were:

Individual tropical furnished: Mr R. Mills, Barbs: Mr C. Pike (Healey trophy for barbs), Characins: Mr G. Enever (Pete Inn Characin Cup), Cichlids: Mr L. Jordan, *Aptinopoma*, etc.: Mr Muckay (Crutch-shank Cup), Labyrinth: Mr F. Kendrick, E.T.C.: Mr C. S. Walker, Tropical catfish: Mr J. Bellingham, Corydoras and Brochis: Mr T. Crutchshank (best fish in show, *C. robustus*), Rasbora: Mr M. Carter, Danios and minnows: Mr F. Groveson, Loaches: Mr M. Carter, A.O.V. tropical egg-layers: Mr J. Batts, Sexed pairs: Mr Wright. Guppies (judged by F.G.A.), A.V. male: Mrs R. Quernell, A.V. female: Mr and Mrs Fagan, Swordtails: Mr R. Wood, Platys: Mr L. Little (Dora Crutchshank trophy), Platys: Mr G. Greenhalf, Mollies: Mr J. Batts, Singletailed goldfish: Mr V. Voysey



(P.R.A.S. trophy). **Twintails:** Mr R. Essoe, A.o.s. coldwater; Mr V. Viosey, Breedless tropical egglayers; Mr J. Batts, Breedless tropical livebearers; Mr G. Greenhall, Aquascapes; Mrs S. Askin, Reptile/amphibians; Mr M. Wood.

**THE RECENT** annual Open Show held by the **EDMONTON SECTION of the FANCY GUPPY ASSOCIATION** attracted a record entry of 292 entries (476 fishes in all). Prizewinners were as follows:

**Females.** Metropolitan, Mr and Mrs Phillimore (Edmonton, 74). Scallops, Mr D. Crane (East London, 73). Natures, Mr R. Bradford (best opposite sex, Radlett, 77). Superfish, Mr A. Fowles and Mr H. Vinall (Edmonton, 75). Cifer, Mr D. Crane (East London, 74). Wedge, Mr G. Goodall (Radlett, 75). Round tail, Mr L. Smith (Radlett, 74). Colour, Mr B. Myers (E.L., 73).

**Breeders.** Master breeders, Mr G. Goodall (Radlett, 74). Advanced Master breeders, Mr G. Goodall (best breeders, Radlett, 75). Matched pairs, Mr K. Lee (E.L., 76). Males, Mr M. Dellingspole (Birmingham, 75). Formals, Mr K. Lee (E.L., 73).

**Ladies.** Breeders, Mrs P. Abbott (Radlett, 73). Male, Mrs P. Abbott (74). Female, Mrs P. Abbott (70). **Junior.** Male, Miss Bradford (Radlett, 74). Female, Miss Bradford (70).

**Males.** Original veil, Mr B. Myers (E.L., 73). Bottom sword, Mr D. Crane (E.L., 72). Double sword, Mr D. Crane (73). Top sword, Mr Redford and Mr Ballard (South London, 74). Dorsal, Mr S. Smith (Birm., 77). Delta, Mr Fowles and Mr Vinall (best fish in show, rose bowl and gold pin, Edmonton, 75). Fan tail, Mr M. Dellingspole (Birmingham, 75). Cifer, Mr D. Crane (E.L., 74). Lyretail, Mr M. Dellingspole (71). Long dorsal veil, Mr R. Waters (E.L., 74). Short dorsal veil, Mr B. Myers (E.L., 74). Colour, Mr P. Moriarty (Radlett, 75). Roundtail, Mr R. Bradford (Radlett, 74). Scaurtail, Mr S. Smith (Birmingham, 64). Spurrail, Mr D. Crane (E.L., 74).

**MRS N. JORDAN of BRACKNELL A.S.** writes to us: "The Bracknell Open Show was the best that we have had—680 entries. A great deal of thought as well as work went into it, and the Committee and Officers worked hard without exception. The club has had a very good year and excellent programmes arranged by Mr M. Carter, programme secretary".

Winners of the classes at the Show were:

**Balls:** Mr Hutton (Weymouth). **Characins:** Mr and Mrs Tynes (Walthamstow). **Angels:** Mr S. Cowell (Bethnal Green). **A.o.s. cichlids:** Mr M. Davies (Reading). **Dwarf cichlids:** Mr A. Blake (Basingstoke). **Labyrinth:** Mr P. Kerrick (Frolicano). **Succinea fishers:** Mr Carter (Bethnal Green). **E.T.C.:** Mr R. Armstrong (Bracknell). **A.o.s. catfish:** Mr P. Merritt (Reading). **Corydoras/Brachis:** Mr D. Armour (Riverside).

**Rubbers:** Mr P. Merritt (Reading). **Danos and minnows:** Mr B. Weston (Basingstoke). **Loaches:** Mr M. Carter (P.R.A.S. trophy). **A.o.s. egglayers:** Mr P. Arpsoid (Bethnal Green). **Male guppy:** Mr T. Jones (Weymouth). **Female guppy:** Mrs Netherell (Riverside). **Swordtails:** Mr K. Barrett (Kingston). **Platy:** Mr R. Bowes (Walthamstow). **Mollies:** Mr G. Greenhall (Kingston). **A.o.s. livebearers:** Mr J. Batts (best in show). **Breedless egglayers:** Mr R. Cox (High Wycombe). **Breeders livebearers:** Mr G. Greenhall (Kingston). **Sexed pairs egglayers:**

Mr A. Marshall (Basingstoke). **Sexed pairs livebearers:** Mr A. Blake (Basingstoke). **Single-tailed goldfish:** Mr D. Goodbody (Walthamstow). **Twintailed goldfish:** Mr D. Arkell (Bracknell). **A.o.s. coldwater:** Mr J. Norris. **Centrarchidae:** Mr and Mrs Sedwell (Portsmouth). **Rooted plants:** Mr M. Davies (Reading). **Carrings:** Mr M. Goss (Riverside). **Mini-furnished aquaria:** Mr T. Duffy (best Bracknell exhibit).

**FURTHER** news of **NORWICH & D.A.S.** activities reaches us from secretary Mr P. Groves. The society has been running an advertising campaign all the year for new membership, using regional newspapers and car stickers to aid them and membership has been steadily increasing. The Society's first Show was held in September, but as this was the first it took the form of an exhibition, with competition only for the furnished aquaria class, restricted to members of Norwich. There was a large variety of specimen fishes, a colourful display of freshwater and marine fishes from a local fish centre and a really beautiful pond and garden display from a nursery. Also in attendance was Mr Clarence Chus Ah Lam of Singapore Aquarium showing some really outstanding golden sailfin mollies that he has developed. Attendance was around 1200. The Mickfield Trophy for furnished aquaria was won by Mr A. Barge (2, Mr A. Buck; 3, joint junior entry of Masters Lacey, Bush and Davies). Decision was by public vote. There is still room for new members who are asked to contact secretary Mr P. Groves, 35 Folly Road, Wyomondham, Norfolk.

'**REIGATE & REDHILL A.S.** can look back at summer 1970 as a time of trial and triumph' reports P.R.O. Mr Taylor. "The untimely resignation of chairman Mr Bert Young for family reasons necessitated an A.G.M. in June when 19-year-old

Steve Perham was elected to the hot seat! This meeting caused the postponement of the Society's annual rockpool hunt at Blackrock, Brighton to mid-July, which, when the expedition finally gathered, attracted nine members and a dog. . . . Fortnightly Monday evening meetings at Somers Hall, Shipshoe Street, Reigate continued to attract new members and recent meetings covered a variety of topics. Bob Cannacot of Gaydogs Pet Shop demonstrated his expertise at tank glazing by replacing a leaky 24 in. by 12 in. by 12 in. in a few minutes. He also tried to teach those present how to cut glass, with varying success. Coldwater Night saw Roger and Pam Whittington and Bill Leach of the G.S.G.B. providing a slide show illustrating varieties of goldfish and plants with a stage-by-stage photographic description of the building of the Whittington's fish house and numerous ponds. Mr Graham Cox of Seaquariums lectured on varieties of tropical marine fish and showed a colour film of such fish in the Red Sea".

The Society's Open Show was held at the Colman Institute, Redhill where extra space and facilities were available. Over 400 entries were received and this has given members heart to plan for greater things next year. "An encouraging sign for the hobby as a whole", writes Mr Taylor "was the total of 37 breeders teams on show".

First-place awards in the individual classes were made to the following:

**Inter-club furnished tropical:** Reigate & Redhill A.S.; **inter-club furnished coldwater:** Portsmouth A.S. **Individual furnished:** Mr T. G. A. Humphreys. **Barbs:** Mr W. D. Harper (Kingston). **Characins (C):** Mrs M. Nicoll (R. & R.). **Characins (Ca):** Mr R. C. Taylor (Tonbridge). **Cichlids:** Mr W. D. Harper (Kingston). **Angels:** Mrs M. Netherell (Riverside). **Dwarf cichlids:** Mrs D. Barrett (Kingston). **Labyrinth:** Mr G.

#### METHODS FOR ASSESSMENT OF FISH PRODUCTION IN FRESH WATER

Edited by W. E. Ricker (Blackwell, 45s.)

A basic guide to the techniques of fisheries work with particular reference to fishing research methods.

#### METHODS FOR CHEMICAL ANALYSIS OF FRESH WATERS

Edited by H. L. Goherman and R. S. Clymo (Blackwell, 35s.).

A handbook of chemical methods used by freshwater biologists, with details and explanations to make the text suitable for those with little training in either chemistry or limnology.

## For the Technical Library

#### ASPECTS OF FISH PARASITOLOGY

Edited by Angela E. R. Taylor and R. Muller (Blackwell, £3)

A collection of papers presented on the parasitology chiefly of British fishes, at the Symposium of the British Society for Parasitology last year. Parasites discussed are mainly the worm groups.

Greenhalf (Kingston), E.T.C.; Mr R. D. Bath (North Kent); A.O.V. catfish; Mr R. J. Baker (Torbide); Corydoras/Brochis; Mr D. W. Armour (Riverside).  
 Rasbora; Mr W. D. Harper (Kingston).  
 Danios and minnows; Mr W. D. Harper (Kingston).  
 Loaches; Mr M. Carter (Stratford).  
 A.O.V. egglayer; Mr M. Storage (Basingstoke).  
 A.V. guppy male; Mr B. Smith (R. & R.).  
 A.V. guppy female; Mr K. A. Johnson (Portsmouth).  
 Swordtails; Mr K. Barrett (Kingston).  
 Platys; Mr G. Greenhalf (Kingston).  
 Molies; Mr G. Greenhalf A.O.V. livebearers; Mrs D. Barrett (Kingston).  
 Singetail goldfish; Miss D. Morris (S.G.B.).  
 Twinstail; Miss J. Leach (R. & R.).  
 A.O.V. coldwater; Miss F. Leach (R. & R.).  
 Tropical egglayers breeders; Mr M. Storage (Basingstoke).  
 Tropical livebearers breeders; Mr J. Stephens (N. Kent).  
 Cold-water breeders; Miss D. Norris.

The best fish in show award was made to Mr D. W. Armour (Riverside).

**THE GOLDFISH SOCIETY OF GREAT BRITAIN** held their annual Convention and Open Show in Lancaster this year, where facilities were provided and excellently staged by the members residing in the area. While the judging took place, three most informative and entertaining talks were given by members. Mr J. Linale spoke on goldfish breeding. He emphasised the need for good feeding for the adult fish during summer and autumn, a winter rest period indoors (but under cool conditions), and a spring/early summer breeding programme timed according to the availability of live food. Mr Linale also mentioned the best-crossing in late summer of fish from the previous year, as a dress rehearsal to serious line-breeding the following year.

Mr R. A. Dodkins spoke on "Running Your Fish House" and explained how he favours concrete tanks built a foot or so above ground level to avoid sooting, circulating water incorporating biological filtration, and angle-iron tanks above these.

The third speaker, Mr A. Sutton, was concerned with the high cost of dried foods obtainable and he introduced some of his own in which shredded, dried *Elodea* and dried shrimps or prawns were included. This speaker also uses many different live foods, including chopped garden slugs and the commercial trout pelleted foods obtainable within the Society.

The judging of the 120 exhibits was carried out by members Mr M. Chase, Mr W. Leach and Mr W. Wilson, with the welcome addition of Mr T. L. Dodge of M.A.P.S. as guest judge. Winners were:

**Adults, Singetail:** Mr K. Speaks. **Met. normal:** Mr J. Linale. **Nac. twinstail:** Captain L. C. Betts. **Globe-eye:** Mr G. Fern. **Brandyhead:** Mr T. Halpin. **Pearlscale:** Mrs B. Dudley. **Colossal:** Mr J. Bundell. **Pompano:** Mr H. Berger. **Bubble-eye:** Mr C.

**CARSHALTON @ D.A.S.** are holding a social and buffet dance on 11th December. Those interested are asked to contact the secretary at 8 Reading Road, Sutton, Surrey (tickets 18/- each).

**Long Common goldfish:** Mr H. T. Jago. **London shubunkins:** Mrs P. Whittington. **Met. fantail:** Mrs A. Wilson. **Nerveous fantail:** Mr D. Pearson. **Oreada:** Mr C. Long. **Breeders, Singetail:** Mr D. Pearson. **Twinstail:** Mr J. Linale. **Globe-eye:** Mr J. Linale. **Brandyhead:** Mr D. Stradley. **Colossal:** Mr J. Linale. **Pom-pom:** Mr T. Halpin. **Bubble-eye:** Mr K. Speaks. **London shubunkin:** Mrs P. Whittington. **Fantail:** Mr B. Herbert.

**WHEN YATE & D.A.S.** held their fourth annual Open Show there was a record entry of 401 fishes exhibited. Yate members put a tremendous amount of hard work and enthusiasm into this event and it resulted in the Society's best Show yet and a corresponding benefit to club funds. The award for the highest points at the show went to Mr G. R. Furber; best breeders, Mr K. Spier; best characin, Mr R. Bishop; best catfish, Mr S. Green; best livebearer, Mr G. R. Furber, who also took the best fish in show award. First-place winners of the classes were:

**Male guppy:** Mr Daniella. **Female guppy:** Mr D. R. Stevens. **Swordtails:** Mr G. R. Furber. **Molies:** Mr K. Spier. **Platys:** Mr G. R. Furber. **Barbs, under 1 in.:** Mr J. Powell. **A.O.V. barbs:** Mr D. Noble. **Minnows, danios, rasbora:** Mr G. R. Furber. **Characins H. & H.:** Mr D. Noble. **Characins, A.O.V.:** Mr R. Bishop. **Anabantids:** Mr F. Hibbs. **Fighters, Mrs King, Anguis:** Mr A. J. Holt. **Dwarf cichlids:** Mr R. Bennett. **A.O.V. cichlids:** Mr J. Powell. **Corydoras:** Mr R. Larcombe. **A.O.V. catfish:** Mr S. Green. **Sharks and loaches:** Mr G. R. Furber.

**Send pairs:** Mr G. R. Furber. **Breeders livebearers:** Mr K. Spier. **Breeders egg-layers:** Mr G. Churchill. **Killifish:** Mr R. Larcombe. **A.O.V. tropicals:** Mr F. Wright. **Goldfish:** Mr F. Hibbs. **Shubunkins:** Mr Daniella. **A.O.V. goldfish:** Mr R. Bishop. **Junior A.O.V. tropical:** J. Hayward.

**MID-SUSSEX's** membership now tops the 130 mark, and both old and new members among the 93 who attended the October meeting very much enjoyed a coloured slide show illustrating events in which the Society had taken part during the year and including the float at the Dolphin Fair, the stall and Tropical Fish Exhibition at the Carnival of Youth, and above all the Fish Exhibition held in September. Also at this meeting, members enjoyed slides presented by Mr N. Short, a committee member, showing progressive steps in pond construction. This linked up nicely with the most interesting lecture that Captain L. C. Betts, chairman of the G.S.G.B. gave in September on water gardening, with special reference to care of the pond, through the ice-covered

days of winter to the lily-growing time of high summer.

Other events in which the Society has taken part recently have included the inter-club competition with LITTLEHAMPTON, held this year at Littlehampton and won by Mid-Sussex by 32 points to 23.

With the rapid growth of the Society, the committee has felt the need for a second vice-president, and Mr Graham Cox, one-time director of Brighton Aquarium, was elected.

Mid-Sussex's meetings are held on the third Thursday of each month at Ockley Lodge, Keymer, and new faces are always welcomed. Details may be obtained from secretary Mr J. Reeve, 36 Rumbolds Lane, Haywards Heath.

**WINNERS** of classes at the **BRISTOL A.S.** Open Show are the following:

**Common goldfish:** Mr A. Greenham (W. Butler Coronation Cup). **Bristol shubunkins, 3 in. limit:** Mr K. C. Jason (The R. T. Child shield for the second best fancy coldwater fish in show; the F. G. Deaman Cup for the highest number of points in the show; the Mid-Somerset Cup for the best in class). **Second in this class** was Mr B. Pimock who won the E. R. Bhanden Cup for the best shubunkin exhibited by a member. **Bristol shubunkins, 3 in. limit:** Mr D. S. Langdon (T. T. Wills Cup for best in class; the Eric Butler Cup for the best fancy coldwater fish in show; the Mabel Davis trophy for the best exhibitor in show).

**Voltails:** Mr R. King (The I. J. Spencer trophy). **Moors:** Mr K. C. Jason (A. D. J. Brooks Cup). **Loachheads, bubble-eyes, etc.:** Mr H. T. Jago (Bristol A.S. Cup). **Oreada:** Mr R. King (Jack Savage Cup). **Nymphs and comets:** Mr K. C. Jason. **Fantails, scaled:** Mr V. F. G. Collins (R. W. Rudge Cup). **Fantails, calico:** Mr F. Radford (Bristol A.S. Cup). **A.O.V. pond or river fish:** Mr F. Radford.

**Bristol shubunkins, bred 1970:** Mr K. C. Jason (Mrs E. R. Blunden Cup). **Moors bred 1970:** Mr K. C. Jason (C. F. Whithead Cup). **A.O.V. fancy fish bred 1970:** Mr R. King (R. G. Watson Cup). **Breeders class, shubunkins, goldfish, comets:** Mr K. C. Jason (S. J. Davis trophy). **Breeders class, A.O.V. fancy fish:** Mr H. T. Jago (Bristol Coldwater Breeders Cup). **Bristol shubunkins, matched pairs:** Mr K. C. Jason (Berry Hill Cup). **Novice class, Bristol shubunkins:** Mr D. S. Langdon (Lewis Emery Cup).

**Furnished aquaria, coldwater:** Mr P. Lloyd (Zenas Webb Cup). **Furnished aquaria tropical:** Mrs I. Stone (J. S. Warry Crystal Goblet). **Furnished aquaria, inter-club:** Bristol A.S. (Victor Cappaldi Cup). **Aquatic plants, coldwater:** Miss A. H. Morgan. **Aquatic plants, tropical:** Mr M. Taylor.

**Fighting fish:** Mrs C. C. King (Lowell Baldwin Cup). **Labyrinth, excl. fighters:** Mr G. R. Furber (J. E. Robinson Cup). **Barbs:** Mr R. Watts (H. J. King Cup). **Characins, H. & H.:** Mr R. K. Day (O. E. Organ Cup). **A.O.V. characins:** Mr S. Green (Lewis Cup for best tropical fish). **Frank Brown Trophy:** H. J. Shepherd Cup for best egglayer). **Cichlids, excl. angels:** Mr E. Wilson. **Anguis:** Mr A. D. Jenkins (Donaldson Brown trophy). **A.O.V. egglayers:** Mr G. R. Furber (M. Bolla Goblet). **Catfish:** Mr S. Green.

**Guppies, short tail:** Mr M. Taylor. **Guppies, long tail:** Mr M. A. Lerway. **Guppies, female:** Mr M. Taylor. **Swordtails:** Mr M. A. Lerway (Keynham Cup). **A.O.V. livebearers:** Mr A. D. Jenkins (Percy Gibb Cup for best livebearer). **Tropical livebearers breeders:** Mr R. Watts (R. Jason Cup). **Tropical egglayers breeders:** Mr R. Toose.



## In Brief . . .

. . . **EAST DULWICH A.S.** report a full programme. Recent speakers have been Mr F. Vicker on characins and Mr D. Phillimore and Mr G. Goodall on guppies. Matches against Croydon A.S. and Freelance resulted in a win against the latter. At inter-club table shows arranged by the South Thames Aquarist Group, club members are more than holding their own.

. . . **AQUARISTS** from Amesbury, Salisbury, New Forest and Winchester joined **SOUTHAMPTON & D.A.S.** to hear a delightful slide lecture by Captain 'Alligator' Edwards on reptiles and amphibians. The Captain showed many live specimens of lizards, iguanas and snakes and for a finale introduced Cuthbert, a Mississippi alligator. The audience were most disappointed when the lateness of the hour brought the meeting to a close.

. . . **THE HOME** Aquaria competition at **ILFORD & D.A. & P.S.** has been won by Mr Seaman, who received a Cup (2, Mr Woodhams, shield; 3, Mr Forrester, medal).

. . . **AUCTIONS** held by **LINCOLN & D.A.S.** each April and October are attended by members from various clubs in the area and at the October auction over 100 enjoyed brisk bargaining for some fine plants and fish, particularly large cichlids.

. . . **ANNUAL** trophies were presented to **BETHNAL GREEN A.S.** members as follows: Fish of Month, Mr P. Arnould; Points Cup, Mr J. Goner; 1st Year Members, Mr T. Lovett; Most points at Open Shows, Mr S. Cowell. Mr S. Cowell won the Fish of the Year Competition with a phantasmic barb (2, Mr P. Arnould; 3, Mr T. Lovett).

. . . **GUILDFORD & D.A.C.** enjoyed a talk on marine fish by Mr John Adams that proved to be most informative and interesting; and a film show of films lent by the C.E.G.B., one of which showed the importation of vast numbers of fish from abroad for use at a power plant to keep weeds from forming an obstruction.

. . . **NEW FOREST A.S.** members greatly enjoyed the B.K.A. slide and tape lecture on how to construct a completely insulated fish house that is easy to maintain and heat. After the second leg of the triangular competition with Bourne-mouth and Salisbury societies, New Forest leads at this stage.

. . . **HEMEL HEMPSTEAD A.S.** have had two extremely interesting and instructive talks in the past month. The first was given by Mr Bob Eason on goldfish and the second by Mr Henry White of Hendon 'All about Tropical Fish'. Table shows take place at each meeting, which are held every other Thursday at Adeyfield Secondary School.

. . . Mr I. MATHIESON, chairman of **TONBRIDGE & D.A.S.**, entertained 54 members of his club and **NORTH KENT A.S.** with a slide show and lecture on a visit he made to Nairobi and one of Kenya's National Parks in the late 1950s. Overall points awarded at the inter-club table show were: Tonbridge, 43; North Kent, 26.

. . . **WHEN BISHOPS CLEEVE A.S.** invited members of **SWINDON & D.A.S.** for a competition, the home team won with a total of 903½ points against Swindon's 857½. While the judging took place both teams were busy furnishing two tanks, which were later raffled.

. . . **ANYONE** interested in guppy breeding and wishing to join the **FEDERATION OF GUPPY BREEDERS' SOCIETIES** should contact publicity officer Mr A. Baker at 201 Stardee Road, Eyres Monsel, Leicester LE12 9FY, who will gladly advise on the nearest section. The F.G.B.S. held a successful open show in October with 261 entries from seven sections, South Midlands, East Midlands, West Midlands, Bristol and Bath, Provincial, Eastern Counties, Three Counties.

. . . **WHEN** the guest speaker failed to turn up at **HASTINGS & ST LEONARDS A.S.** club meeting to talk on killifish, club member Graham Pryke, a killifish enthusiast, was able to give an impromptu talk that proved informative and interesting. At the Society's club night with **BEXHILL A.S.**, the visiting team won the quiz, but Mr R. Sleet of Hastings was the individual winner.

. . . **BRISTOL T.F.C.** members have been achieving considerable success in open shows during 1970. Mr Gordon Furber has won many award cards including best fish in show at the Yate Open Show. He also figured prominently in the Bristol Aquarist Open. Treasurer Mr Bob Tooze is also pleased, first at breeding his discus and then winning the breeders' award at Bristol with the offspring. New members and visitors are always welcome at club meetings.

. . . **AFTER** the first leg of the inter-society contest between **BEDWORTH A. & P.S.** and **NUN-EATON A. & P.S.**, Bedworth emerged the winners by 31 points to 20. The 105 fishes benched were of a very high standard which made the task of Mr and Mrs Walker, M.A.A.S. judges, very difficult. The best in the show award went to Mr R. Tedds. Secretary Mr J. Davis and junior member Richard Shakespeare won the 'Ride on a Judges' Course' competition part 2 for supplying the scientific and common names and the show class of 40 tropical fishes illustrated on slides.

. . . **HAMPSTEAD A.S.** members recently enjoyed a talk and slide show by Mr H. Hartridge on marine fishes. At the table show following, Mr R. Green won the best in the show award with a female guppy.

. . . **AT** the eighteenth A.G.M. of **YEOVIL & D.A.S.**, the reasonable hope was expressed, based on a good financial reserve and a present membership of some 60 fishkeepers, that the Society would flourish for many more years to come. Members were congratulated on successes at recent open shows. At Bristol Mr S. Langdon won best in the show, best coldwater, best shubunkin, novices class and various card awards and best coldwater at Torbay. Also at Torbay Mr V. Collins took first, second and third in the twilight class, first in breeders coldwater and first and second in pond and river fish.

. . . **WINNER** of this year's home aquarium competition at **LEAMINGTON & D.A.S.** was chairman Mrs J. K. Smith, for the second year in succession. The tank used was a modern, all-glass tank designed to give a small trough in front for house plants. Inside the tank Mrs Smith had harlequins, neons and barbs. Rockwork was well laid out amidst Vallneria, bacopa, cryptocorynes and stricta. 'A first-class tank' reports judge Mr P. N. Thomas in the Leamington Newsletter. Second prize winner was Mr Heath (75 points) and third, Mrs R. Gunthorpe.

. . . **BRADFORD & D.A.S.** now has 74 paid-up members plus several honorary members and one Life Member. The Society has been enjoying a variety of activities, including a visit to the R.A.F., the judging of the home furnished aquaria competition (results to be announced), planning for the annual dinner and hearing two excellent lectures from club member Mr D. Carr, who spoke as an aquatic dealer, and Mr Prince, one of Romblalds Water Board's top chemists, who spoke on water chemistry.



## Dates for Your Diary

6th December. **HORSFORTH A.S.** Open Show, Greenside Hall, Rawdon, nr. Leeds, West Yorkshire. 12.30-4.30 p.m. Schedules from Miss J. Helm, 29 Wollington Road, Leeds LS12 1EF (opposite Leeds 2005).

12th December. **F.R.A.S.** Annual General Meeting, Conway Hall, Red Lion Square, London, W.C.1, at 2.30 p.m.

### 1971

14th March. **BELLE VUE A.S.** Open Show, Openshaw Boys Club, Crossley House, Ashton Old Road, Openshaw, Manchester 11.

21st March 1971. **TOP TEN A.S.** Open Show, Huddersfield Town Hall.

3rd April. **THURROCK A.S.** Open Show, Thameside School, Arthur Street, Greys, Essex. Schedules: Mr D. C. M. Dorrant, 22 Kingman Road, Stanfield-le-Hope, Essex.

4th April. **DOUGHTON & D. A.S.** Open Show. Schedules available in February 1971 from Mr H. Lighton, 102 Abbey Drive, Doughton-Le-Spring, Durham.

18th April. **SHEFFIELD & D. A.S.** Open Show, Meersbrook Varsity Hall, Meersbrook Park Road, Sheffield 8.

19th April 1971. **BURY & D. A.S.** Open Show, Church House, The Wyke, Bury.

25th April. **FREELANCE A.S.** Open Show, All Saint's Church Hall, Surrey Square, Waltham, London, S.E.17. Details: Mr J. E. Stamp, 72 Redman House, Lamb Street, London, S.E.1. Phone 01-497 4966.

25th April. **YORK & D. A.S.** Open Show.

2nd May. **DUKERIES A.S.** third Open Show, Windford Portland Technical Grammar School, Sparken Hill, Worksop, Notts. Show secretary, Mr M. Woodley, 55 Silverdale, Dinnington, Nr Sheffield.

9th May. **WORKSOP A. & Z.S.** Open Show, North Notts College of Further Education, Carlton Road, Worksop. Schedules shortly from Mr F. G. Wilson, 17 Clifton Street, Worksop, Notts. Free car park; refreshments available.

9th May. **DERBY REGENT A.S.** Open Show, Sherwood Foresters Recreation Centre (Normanton Barracks), Osmaston Park Road, Derby (follow R.A.C. signs). Schedules from Mr R. T. Bull, 26 Queens Drive, Littleover, Derby.

15th May. **UNBRIDGE & D. A.S.** Open Show, Meadow School, Royal Lane, Hillington, Unbride, Notts. Schedules: Mr N. V. Lee, 46 Aireside Road, Ealing, London, W.3.

16th May. **MERSEYSIDE A.S.** Open Show.

22nd May. **SOUTHEND, LEIGH & D. A.S.** Open Show, Liberal Hall, Clarence Road, Southend (proceed towards sea front

from Southend Central Station, first right, first left). Details: Mr R. D. Orford, 8 Blenheim Chase, Leigh-on-Sea, Essex.

29th May. **CATFORD A.S.** Open Show.

29-30th May. **Sixth INTERNATIONAL GUPPY SHOW (FANCY GUPPY ASSOCIATION)**, Globe Farm Community Centre, Stechford, Birmingham. Open to non-F.G.A. members.

30th May. **COVENTRY P. & A.S.** Open Show, Foleshill Road Community Centre, Coventry.

6th June. **ACCRINGTON A.S.** Open Show.

20th June. **GLOSSOP A.S.** Open Show Glossop Adult Educational Centre, Talbot Street, Glossop (A.M.D.A.S. Show).

20th June. **SWILLINGTON A.S.** Open Show.

27th June. **WEDNESBURY & D. A.S.** Open Show, Boys High School, St Paul's Road, Wednesbury (3 mins. off M.6). Schedules from Mr T. Shipton, 9 Gloucester Road, Wednesbury.

4th July. **LYTHAM A.S.** Open Show, Lowther Gardens, Lytham, Lancs.

15th August. **NORTH STAFFS A.S.** Open Show.

9th-10th October. **BRITISH AQUARIST FESTIVAL** at Belle Vue, Manchester.

28th-31st October. **THE AQUARIUM SHOW '71**, Royal Horticultural Society Old Hall, Vincent Square, London S.W.1.

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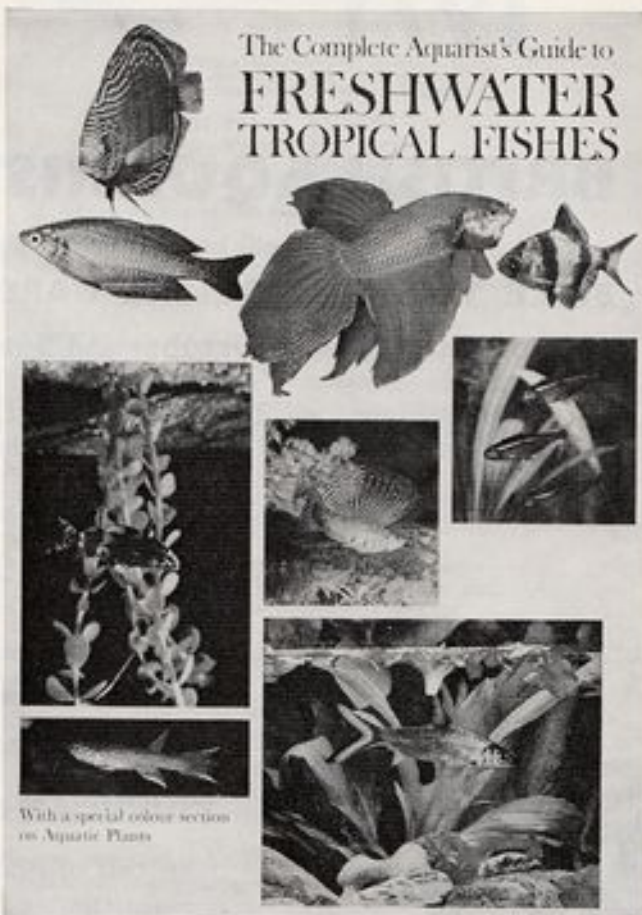
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30x12x12 in. £5 6 4	30x12x12 in. £12 6 0		Internal Corser .. 4 11	
30x15x12 in. £5 15 7			Hykro Jar, Bottom .. 5 0	
30x15x15 in. £6 8 4	<b>METAFRAME HALF REFLECTOR</b>	<b>PUMPS AND FOUNTAINS</b>	Hykro De Luxe .. 13 4	<b>NETS</b>
36x12x12 in. £5 16 11	16x8 in. .. 8 4	Stokes Gdn. Pnc. £7 19 4	Habin Filterfast Jar .. 34 4	Green Nylon net: 3x2 1 6 4x3 2 0 5x4 2 6 6x5 3 0 9x7 5 0
36x15x12 in. £4 4 4	20x10 in. £1 9 9	Shaim 388 Compact P/W £10 5 0 complete	Habin Filterfast Sen. 57 0	White Terylene net: 3x2 2 4 4x3 3 0 5x4 3 4 6x5 4 0 9x7 6 3
36x15x15 in. £7 12 3	24x12 in. £1 11 3	Shaim 388 Compact S/W £12 0 0 complete	Champagne outside Super Bottom Filter 19 4	Brine Shrimp or Daphnia net: 3x2 1 9 4x3 2 9 5x4 2 4 6x5 3 0 9x7 6 3
48x15x12 in. £9 0 0	30x12 in. £1 18 5	Shaim 386 Single P/W £14 12 4 complete	Corner Bottom Filter 7 4	Wooden handles 7x9 4 3
48x15x15 in. £10 13 4	Light fittings for above: 16 in. .. 8 4 20-36 in. .. 15 0	Shaim 387 Double P/W £15 14 4 complete	Undergravel Filter .. 8 0	
		Shaim 387 Double S/W £14 15 0 complete	Bestom Filter with airstone .. 5 4	
<b>HEATERS</b>	<b>METAFRAME FULL HOOD</b>	Shaim 387 Double S/W £14 15 0 complete	Corner Filter .. 7 4	
Es. Es. Standard—25, 50, 75, 100w. 8 2	16x8 in. £2 19 0	Shaim 386 Single P/W £14 12 4 complete		
Es. Es. Superb—25, 50, 75, 100, 125, 150w. 11 0	20x10 in. £4 1 3	Shaim 387 Double P/W £15 14 4 complete		
Uno Regal—25, 40, 60, 75, 100, 120, 150, 200w. 10 3	24x12 in. £4 18 9	Shaim 387 Double S/W £14 15 0 complete		
Elephant—25, 40, 50, 60, 75, 100, 120, 150w. 10 8	30x12 in. £6 4 0	Shaim 400 P/W £30 12 4 complete		
Reas—25, 50, 75, 100, 150w. 10 8	No 1 Aquarium & Shade .. £2 7 4	Shaim 400 S/W £31 11 3 complete		
Uno 200w. 12 0	No 1 Vivarium .. £2 7 4	Proops De Luxe £7 19 4		
Wizard—25, 40, 75, 100, 120, 150w. 8 8	No 2 Aquarium & Shade .. £3 15 0	Cascade .. £8 8 0		
Wizard Double Coil—200, 250w. 22 8	No 3 Vivarium .. £3 15 0			
	<b>BOW-FRONTED BOOKCASE SETS</b>	<b>AIR PUMPS</b>	<b>FILTRATION ACCESSORIES</b>	<b>BREEDING TRAPS</b>
<b>COMBINED HEATER &amp; THERMOSTAT</b>	36x15x12 in. £18 17 4	Summit .. £1 3 0	Datum glass wool 1 3, 2 4	Windmill combined breeding and rear- ing .. 21 4
Es Es Dual-O-Matic—100, 150w. £2 7 4	48x15x10 in. £19 7 4	Super Summit .. £1 7 4	Datum filter carbon 1 3, 2 4	Hykro 2-in-1 .. 8 3
Es Es Precac-Matic 50, 100, 150w. £1 6 3	<b>BOW-FRONTED WITH SCROLLED STANDS &amp; COVER</b>	Montrose Minor .. £1 5 0	Datum Ac. pad .. 1 3	Kalasa 3-in-1 .. 15 0
Incor Pac Submersible Maxmaxic £1 7 3	34x15x12 in. £17 5 3	Montrose Major .. £1 7 4	Nylon Filter Medium .. 1 4	Gro-Wal S-way .. 27 8
	30x15x12 in. £20 3 9	Magrose .. £1 10 0	Datum Filter Pads .. 1 4	American .. 27 8
	36x15x12 in. £20 14 3	Jay, Zoobeko .. £2 6 0	Inter-Pac Polymer wool .. 1 4	Fish breeders nets: 5 and coarse .. 5 6 Hykro fry hatcher .. 8 3 Hykro Vahape .. 9 0
	48x15x10 in. £23 14 4	Zoobeko .. £2 14 0	Filter Carbon .. 2 0	<b>AQUAMASTIC</b>
<b>THERMOSTATS</b>	<b>TWO-TIER STANDS</b>	Ruby one outlet .. £1 2 0	Tonic Salts .. 2 4	1 lb. tin 2 9+p. 4 p. 2 4
Uno Popular .. 11 4	18x10x36 in. £2 11 0	Ruby two outlet .. £1 15 0	Aquarium Pad .. 1 3	2 lb. tin 4 4+p. 4 p. 3 0
Uno Pop/Neon .. 14 0	18x12x36 in. £2 13 4	Esha 200 .. £3 19 4	Glass Wool Tissue .. 2 0	4 lb. tin 7 0+p. 4 p. 4 4
Uno Inside Control .. 15 0	24x12x36 in. £3 0 6	Esha 200 without control .. £7 12 4	"MGH" Man-made Fibre Wool .. 2 0	14 lb. tin 19 9+p. 4 p. 9 0
Uno Outside Control .. 18 0	30x12x36 in. £3 4 0	Esha 300 with control .. £9 9 0	Synth Nylon Wool .. 2 0	
Uno Comet Top Neon .. 17 4	30x15x36 in. £3 15 0	Esha 400 with control .. £10 10 0	Synth Carbon .. 3 8 14-24-	<b>DUROGNOST</b>
Uno Comet Top Neon .. 20 0	36x12x36 in. £3 8 3	K.S. Pump .. £1 7 4	wool .. 1 4	Water hardness testing kit .. 20 0
Es Es Minor .. 11 0	36x15x36 in. £3 15 0		Inter-Pac .. 1 4	Spare tablets Pks. of 10 Strength N.3 or N.5 2 0
Es Es Major .. 18 8	48x12x36 in. £4 15 0	<b>AIR PUMP ACCESSORIES</b>	Hykro Vahape .. 9 0	Indicators each .. 4 0
Es Es Sentinel .. 20 9	48x15x36 in. £5 15 0	Windmill Damps .. 1 0		<b>COLORMETER P6</b>
Elephant Standard .. 18 0		Windmill 7-pieces .. 1 0		pH testing kit .. 42 9
Elephant Key Set .. 18 0	<b>SEEMORE ALL-OVER SHADES</b>	Windmill 3-way .. 9		<b>MISCELLANEOUS</b>
Reas Top/Control with Neon .. 25 0	18x10 in. .. £1 8 9	Windmill through connector .. 4		Hykro Aqua Sealer .. 2 4
Wizard .. 11 4	18x12 in. .. £1 15 4	Small round diffuser .. 4		Hykro Leak Stopper .. 1 4
Wizard/Neon .. 14 0	24x12 in. .. £2 0 9	Flowflow diffuser stone .. 4		K.B. Silicone sealant .. 19 4
Wizard/De Luxe Neon .. 18 4	24x15 in. .. £2 13 3	P.V.C. flexible non-toxic air tubing .. 3		Hykro Brine Shrimp Hatcher .. 15 0
	30x12 in. .. £2 13 3	per ft. .. 3		Wardley pH tester .. 8 9
	30x15 in. .. £2 15 3	P.V.C. air tubing .. 8 3		Hykro Tank Divider .. 15 0
	36x12 in. .. £2 15 3	40 ft. coil .. 8 3		
	36x15 in. .. £3 0 9	Hyflo regulator valve .. 5 0		<b>MIRACLE FOODS</b>
	36x15 in. .. £3 14 6	Halvin needle valve regulators .. 9 6		Miracle Fairy Shrimp .. 5 9
	48x15 in. .. £5 8 0	2-way .. 9 6		Miracle Red Worms .. 5 9
		4-way .. 14 6		Miracle Gordon's Formula .. 5 3
				Miracle Red Worms .. 6 3
<b>OUTSIDE FITTING THERMOSTATS</b>	<b>ARBE PLASTIC AQUARIUMS</b>	<b>AIR PUMP SPARE PARTS</b>		Miracle Tubifex with Chlorella .. 4 9
Concert P. L.J. 24 x 6 x 6 p. 1.0 1,000w. .. £2 3 4	Bowfronted: 18x12x11 in. £8 18 4	Zoobeko Diaphragms .. 3 0		Miracle Daphnia .. 3 9
Sliv-stat .. £1 7 4	24x15x12 in. £14 9 7	Montrose .. 3 4		Miracle mosquito larvae .. 5 9
Springfeld .. £1 7 4	36x15x14 in. £25 10 0	Rena Super .. 4 0		Miracle freeze-dried worms .. 3 0
		Summit Diaphragms .. 4 0		Miracle freeze-dried brine shrimp .. 5 9
<b>THERMOMETERS</b>	<b>WINDMILL GRAVEL</b>	Esha Diaphragms .. 5 0		Miracle Liver Treat .. 7 4
Hykro Spirit .. 7 2	4 9 per 1 lb. bag p. 4 p. 1 9	Esha cartridges .. 2 4		Miracle Fish Nip .. 4 0
Thermometer .. 3 4	Line free gravel 4/- per 7lb. p. 4 p. 1 9			Miracle Goldfish Treat .. 4 0
Floating Spirit .. 2 4	7lb. p. 4 p. 6/- Flax gravel 2 4 per 7lb. p. 4 p. 4/-	<b>RUBBER SUCKERS</b>		
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Persny .. 4 4		Double sided .. 5	Grindel Worm .. 5 0	
Uno Silver line .. 4 4		Hykro Plastic .. 4	Mire Worm .. 5 0	
Windmill outside .. 5 4			Foods .. 4/- bag	
Resting Square .. 12 4			Compost .. 4/- bag	
Windmill outside .. 12 4				<b>POSTAL CHARGES</b>
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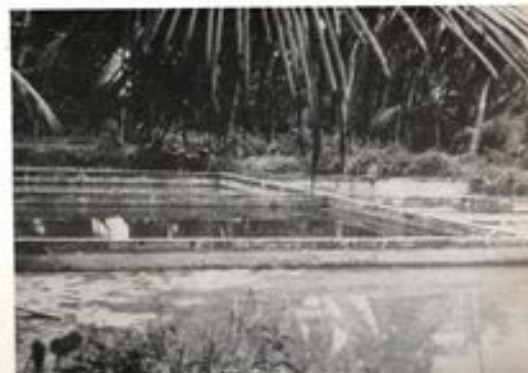
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