

JUNE, 1967

2s 6d

Pet Fish

monthly





TROPICAL FISH



AND

AQUARIUM SUPPLIES

Now at our New Address

568 Gt. Horton Rd., Bradford 7

Large spacious showrooms with 160 Metaframe stainless steel
aquariums full of fish.

A complete range of equipment and our usual friendly welcome
await you.

DON'T DELAY, COME RIGHT AWAY!

We are pleased to announce the appointment to our staff of
Mr Gordon Holmes, the well-known aquatic authority and B.A.F.
Judge. Gordon will be available to help answer all your fishy
problems.

Have you had our 1967 Aquarist Catalogue yet? Send now, only 6d.

Postal and rail services - fish and equipment - second to none.

KEITH BARRACLOUGH

568 GREAT HORTON ROAD BRADFORD 7 YORKS

Tel. 73372

Half day closing Wednesday 1 p.m.

Open until 8 p.m. Friday evenings

Please mention PFM when writing to advertisers

PetFish

Monthly 2s 6d

Vol. 2 No. 3

June, 1967

Subscription rates: £1 15s for 12 issues; 17s 6d for 6 issues (U.S.A. and Canada \$5.00)

Editor: Anthony Evans

In This Issue

	Page
Comments and Quotes	81
Letters	82
How to Set Up the Furnished Jar	86
A Water Circulating System with Biological Filters Incorporated	87
An Aquarium Hood-Limias are Likeable Livebearers	89
Personal Comment	91
Breeding Neons and Cardinals	92
Spawning the Red-Tailed Black Shark	93
Transatlantic Topics	95
Guppy Comment	96
What's New?	97
A Sand-Spawning Annual Fish	98
Mainly for the Pondkeeper	100
Coloured Plants for the Aquarium	101
Readers' Queries	102
Answered	103
Club News	103
The Tide Waits for No Man	103
In Brief	107
Dates for Your Diary	109

Centre Supplement
 PETFISH MONTHLY Guide
 to Tropical Marine
 Aquarium-keeping 1-8

© 1967

**PetFish
 Publications**

554 Garratt Lane,
 London, S.W.17

Telephone 01-947 2805

Advertisement Offices

47 Gresham Street,
 London, E.C.2

Telephone MONarch 7644

Comments and Quotes

● Eyes in close-up ● Cottage by the sea ●
 Import by accident

Seeing in Water

FISHES living in the Bermuda reefs have eyes that are better suited for close-up inspection of their surroundings than fishes inhabiting the open waters of the sea. This is the general conclusion of Dr E. R. Baylor, who has reported the details of his findings in *NATURE*. General observations of the feeding behaviour of coral fishes and the way in which some of them 'delouse' other fishes made it seem likely that they are able to focus their eyes on things close to them. This was proved to be true for several reef species by eye tests applied to the fish in an aquarium. Similar tests on the alewife and silversides showed that their eyes are long-sighted, best suited for distant vision.

One open-water fish has been shown by Dr Baylor to possess a special modification to its eyes which gives it an extra visual advantage when out of water. This fish is the Atlantic flying fish and the pyramidal form of the front of its eyes allows the fish to have normal and not long-sighted vision in its 'flights' above water. Dr Baylor has observed that the flying fish usually take off from and land into patches of Sargassum weed off Bermuda and their exceptional air vision presumably facilitates this manoeuvre.

Tanks in a Cottage

UNLIKE their counterparts of a few decades ago, modern zoologists spend much more time observing live animals in natural or near-

natural conditions than they do with 'pickled' laboratory specimens. To facilitate studies of living sea fauna by zoologists from Leeds University a marine research laboratory has been made by converting a coast-guard cottage at Robin Hood's Bay, near Whitby, Yorks. From the exterior the laboratory still looks more like a seaside cottage. A statement by the University of Leeds quoted in *THE TIMES* said: 'A red pantile roof and dormer windows give minimal indications to both seagulls and sightseers of scientific purpose'.

Inside there is maintained a range of aquaria served by 8000 gallons of sea water pumped in twice daily for the housing of fishes, molluscs and other coastal animals whose habits are being recorded.

Macrostromum Imports Itself

FISHES are not alone in being caught up from their natural waters and hurried thousands of miles to live in British aquaria. Aquarists are unwittingly responsible for the introduction of other aquatic creatures, some of which have even made themselves at home in ponds and rivers here.

Workers in a college laboratory in Liverpool last year were surprised to see developing in their warm water aquaria large numbers of tiny aquatic flatworms that were recognised as a type known to live in warmer parts of the world. *Macrostromum tuba* is the name of this creature, a mere 2 millimetres in length. It didn't take long to discover where they had come from. A Liverpool tropical fish shop had supplied the college with some

aquatic material and *Macrostomum* was found to be present in the tanks of the shop. The flatworms could have reached the tanks with plants or fishes imported from any one of several countries, it was decided,

and undoubtedly the worms have established themselves in other tropical tanks in Merseyside and almost certainly are widespread in aquaria elsewhere in Britain.

Such introductions should be put

on record when observed, say the biologists responsible for this report. We wonder if they're interested in seeing our collection of water snails—we've often wondered where they came from first of all.



PETFISH MONTHLY LETTERS

Split Fins in Guppies

WHEN first I joined the ranks of the Federation of Guppy Breeders Societies some years ago, the general opinion of many of the so-called experts subscribed to the idea that split fins were caused by the fish damaging themselves by brushing against sharp-edged plants such as *Fallicaria* and *C. haerfeliana* and rock used for decoration. This, of course, is now ruled out, although some of the die-hards still persist in using water sprite, excluding all other plants, the idea being that soft-leaved plants cause no damage. I am convinced that this malady is an hereditary factor, the cause not yet determined. Some observations I have made in an outcross I conducted recently may be of interest.

I always run two separate lines from the first brood of any cross. These lines I cross one with the other on each fourth generation, thus outcrossing within the line, which gives me usually very good results. In one such cross for red triangles from pair 'A' I got big-bodied, large-finned and true-to-standard fish. From pair 'B' came fish equal in size and finnage, but at about 4 months the caudal became ragged and in some cases split right up to the caudal peduncle. So at this stage it seems one female carries the bad trait.

I have come to the conclusion that the careful selection of females is of paramount importance in breeding for the best. I have found that there are two distinct types of female in each brood—one carried the desirable and the other the undesirable. This would seem to be the case with fin-splitting. I believe not enough attention is paid to the selection of females. They give very little away from their outward appearance. It takes hours of vigilant observation and careful study to ascertain which is which. There is no short cut, and one cannot find this kind of information in any textbook. One must be prepared to work hard, take disappointments in one's stride, and there will be many, but what a sense of satisfaction when the end product adds up to one 80-point fish.

I hope this may interest Bill Armitage. He did ask for comments in the May issue of PETFISH MONTHLY. His articles are indeed of interest to me and I hope to many other readers. Bill seems to me to be a chap after my own heart, difficult to please, ever-critical of those who lag behind, always ready for an argument—with one horizon in view—perfection in the standard of guppy

breeding. Good luck to him! May his articles continue to arouse a lively interest in the hobby.

He says he is astounded that specialist guppy clubs do little or nothing to encourage recruitment of new members. How wrong he is. It is very obvious he never visits the Midlands shows. My own section, F.G.B.S. South Midlands, make every effort to further this end. We exhibit at open shows, stage exhibits to illustrate our methods. We have exhibited at, to quote but a few, Birmingham Boat and Holiday show, Midland Aquatic and Pool Societies annual open show, Midland Association of Aquatic Societies annual convention. Our president, Mr Ken Pearce, and myself travel to many clubs and spread the gospel when the opportunity presents itself, and our efforts are well rewarded. We have in our section a membership far greater than any other in the F.G.B.S. today.

Now the suggestion of money prizes to attract new members. I personally think it would be a retrograde step. It would commercialise the hobby. I can visualise what is now a pleasant relaxation developing into the type of rat race which is all too common in our so-called modern civilisation of today. This is an amateur hobby and, as such, the exhibitor derives pleasure from achievement and the achievement is in producing the perfect specimen, and not the card, the trophy or the monetary reward. I am sorry I cannot agree with the writer that the idea of a cash payment is constructive, progressive, or conducive to good guppy breeding.

FHUT J0033

Show Secretary, F.G.B.S.

Guppy Comment

I FEEL that some statements made by Bill Armitage under the heading 'Guppy Comment' must be corrected. In the March issue he stated that a tank of guppies supplied by members of the Manchester Section of the F.G.A. could be seen in the Belle Vue Zoo. This F.G.A. showpiece was discontinued 18 months ago.

The April issue has him taking me to task for my previous letter. While I said that the F.G.A. was quite content to leave the commercial aspect to the aquatic trade, I did not say that new members of the Association should purchase all their breeding stock from a dealer. Many members of the F.G.A. have had breeding stock from me, and have bred prize-winning specimens from it.

Of the International Guppy Show, Mr Armitage states that some F.G.A. members objected to American guppies because of the use of hormones in their breeding operations and that invitations were not sent to them. As a member of the Management Committee of the F.G.A., I can say categorically that no objection was

Continued on page 85

WE OFFER QUALITY AND QUANTITY

COLDWATER FISH

Japanese Koi Carp	11/6
Fantails	7/6
Diamond Bass	5/6
Peacock Eyed Bass	5/-
Bitterling	5/-
Silver Orfe	4/-
Black Moors	7/6
Calico Comets	4/-
Red Comets	3/6
Green Tench	3/6
Golden Orfe	4/-
Goldfish and Shubunkins 1/6	7/6

Minimum order for fish 40/- plus 15/- carriage and packing.



A LARGE SELECTION OF POND AND BOG PLANTS ALWAYS IN STOCK



LIVE FOODS

Wingless Fruit Fly Culture ...	7/6
Grindal Worm Culture ...	3/-
Micro Worm Culture ...	3/-
White Worm Culture ...	3/-
White Worm, 1 oz. ...	6/-

Post paid.



We now stock the larger improved "Dynaflor" £6 12s. 6d. Post paid

POND FISH

Goldfish and Shubunkins—6"	15/- pr.
" " —8"	25/- pr.
" " —10"	50/- pr.
Golden Orfe	6" 30/- pr.
Nymphs	5" 30/- pr.
Calico Comets	6" 25/- pr.

Minimum order for fish £2 plus 15/- carriage, packing, etc.



POND PLANTS

WATER LILIES

Spatterdocks	4/6
White	10/-
Red	15/-
Yellow	15/-
Pink	12/6
Japanese attraction	20/-

Minimum order for plants 5/-



NEW RANGE

OF FIBRE GLASS PONDS

No. 1 4'0" x 2'9" x 14"	£4. 15. 0d.
No. 2 3'9" x 2'6" x 13"	£5. 0. 0d.
No. 3 4'3" x 2'9" x 12"	£6. 15. 0d.
No. 4 7'0" x 4'0" x 15"	£14. 5. 0d.
No. 5 6'0" x 3'10" x 19"	£14. 0. 0d.
No. 6 4'8" x 3'6" x 13"	£7. 17. 6d.



Otter Water Pumps from £9/17/6

A FEW TROPICAL FISH FROM OUR SELECTION

Mystus Vitreatus	9/6
Ember Barbs	8/6
Large Sailfin Mollies	pair 42/6
Botia Strigata	8/6
Botia Lochata	8/6
Barbus Orphoides	5/6
Red Tailed Sharks	7/6
Large Silver Sharks	20/-
Red Finned Sharks	7/6
Copelina Arnoldi	5/6
Spanner Barbs	5/6
Large Moonlight Gouramis ...	12/6

SPECIAL OFFERS

Cardinal Tetras	4 for 27/6
Neon Tetras	} 6 for 20/-
Bloodfins	
Cherry Barbs	
Tiger Barbs	
Glowlight Tetras	} 5 for 20/-
Shuberti Barbs	
Nigger Barbs	
Lemon Tetras	
Scissortails	} 4 for 20/-
Black Neons	
Corydoras Aeneus	} 5 for 10/-
Zebras	
White Clouds	} 4 for 12/6
Angels	
Black Widows	} 5 for 10/-
Harlequins	
Red Platy	} 4 for 12/6
Albino Swordtails	
Firemouths	5 for 10/-

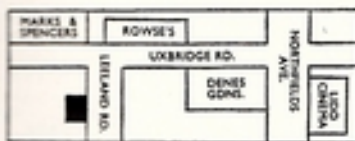
(Personal Callers Only)

J. T. HUNT (AQUAPETS) LTD

17, LEELEND ROAD, WEST BAILING, W.13
Tel. 01 557 2748

Opening Hours 9.00—5.30.
Half-day Wednesday

382 EWELL ROAD, TOLWORTH, SURREY
Tel. 399 6478



BUSES: 207, 207A, 255 83

WE CATER FOR THE NEW AND FOR THE EXPERIENCED AQUARIST



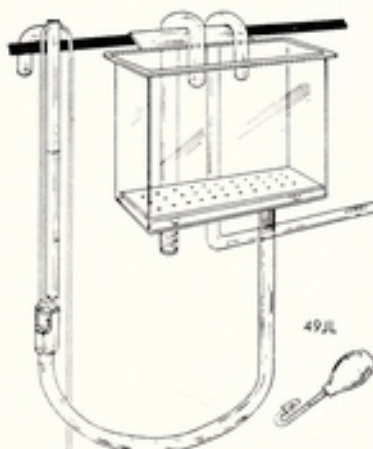
BUSES: 281, 406, 418, 283

"I saw your advertisement in PFM"

THIS IS THE HALVIN I8L

THE LARGEST AIRLIFT FILTER IN THE WORLD

Filter body measures 8" high \times 10" long \times 2½" wide, NO motors, all the power is supplied by the Patented HALVIN Aerator Connector. Gives over 50 gallons per hour.



Price complete with
aerator connector
Suresynth & Sure-
karbon

90/-

One of the Halvin range of products including Filterfast Jnr., Filterfast Sr., "Champagne", Babysaver Bottom Filter, Corner Filter, Bottom Filters, Diptubes, Sediment Removers, etc.

All available from your local dealer now or in case of difficulty
write to the Sole Distributors



S.C.A.N. LTD., OLD BATH RD., COLNBROOK,
SLOUGH, BUCKS.

Please mention PFM when writing to advertisers

LETTERS

Continued from page 82

made to any member of the Committee, and that the invitations were sent. The reason for American entries not being received was due to export/import difficulties prevailing at the time.

Finally, the open shows staged by the F.G.A. always have classes open to non-members. I would suggest that anyone requiring information of any description pertaining to the Fancy Guppy Association should address their enquiries direct to me.

ROY BERRSFORD
Association Secretary,
Fancy Guppy Association

MR Bill Armitage seems to be banging drums on behalf of all and sundry—bully for Bill and his 'Guppy Comment'. His reference to fancy guppies being spread around and made available to all is incongruous with his remarks regarding open shows.

If so many non-F.G.A. members fancy their chances with the fish they have, they must have got good guppies from somewhere. In many cases the truth is, occasionally a single good guppy is obtained by aquarists not really interested in breeding guppies. Anyone truly intent on breeding, studying and competitive showing of guppies should 'join up'. Surely a non-member cannot expect to enjoy privileges a member pays for.

We in the F.G.A. have a Stock Controller who very well takes care of members' needs—fishwise. Yes Bill, members do get fish. Ask among your fellow members.

At present the two major guppy groups—the Fancy Guppy Association and the Federation of Guppy Breeders Societies, are negotiating to arrive at agreed standards. When this comes about open shows will become more inter-open to members of both the F.G.A. and the F.G.B.S. There is no doubt that open classes for non-members will continue to be scheduled as they have always been.

After that, as I say, he who fancies his chances with fancies should join us. Quit knocking us Bill, and read the opening of our Constitution.

J. F. JEFFERY
Treasurer, Fancy Guppy Association

Algal Food

I WAS interested in the item on blue-green alga ('Comments and Quotes', April). Those who are troubled with it can make good use of it, as I do. I keep and breed veiltail goldfish and make my own dried food for rearing, which includes the alga in it. The fresh alga is scraped off the glass upwards, left to dry well on greaseproof paper and then rubbed until it is almost dust-like. The food is made from one well-beaten large egg, four drops of cod-liver oil, one level mustardspoon of dried alga, about 1 ounce of lamb's liver (scalded twice and pressed through a fine sieve) and enough Farin baby food to make a sloppy mixture. A spoonful

is put on a greased oven sheet and baked until crisp (when the domestic baking is done and the oven is in the process of cooling). When the mixture is cool it can be rolled to a powder and sieved through a nylon stocking to get rid of the dust. You then have an excellent food for fry.

AQUARIST
(Name and address supplied)

Breeding Barbs

IN his article on breeding barbs (PETFISH MONTHLY, October, 1966), Mr McNerny states that a bare tank will not do. I think this only applies to pairs of fish that have been brought up or conditioned in tanks that contain gravel or sand.

My tiger barbs are brought up and conditioned in bare tanks before they are placed in a bare tank to breed—with just a few plants at one end held down with lead. They are not frightened and usually spawn the next day.

In the breeding tank I have the water 3½ in. deep: 3 in. of tap water and ½ in. distilled water, kept at 80°F and left to stand for 24 hr. before I put the fish in.

When the fry are free-swimming, I feed them on newly hatched brine shrimp and they grow very fast. Infusoria is not necessary at all.

T. A. HARDMAN
Bury & D. A.S.

Deeper Tanks

READING the items about deeper tanks recently in PETFISH MONTHLY ('Personal Comment', March; 'Letters', May) prompts me to ask if I may add a word of warning. My own attempts to grow plants in 18 in. depth of water were most unsuccessful. The plants grew

Prize Letter

Prize Letters

TO the writer of the letter judged by the Editor to be specially worthy among readers' letters published in each month's issue, PETFISH MONTHLY will award a prize of a well-known make of aquarium aerator (as pictured here).



PETFISH MONTHLY will be glad to have your experiences, comments, suggestions etc. in letters on any matter associated with fish-keeping. Write to the Editor, PETFISH MONTHLY, 554 Garratt Lane, London, S.W.17.

well and were in good condition but would never grow to any height. I tried various fertilisers and any suggestions made, but they stayed about 9 in. tall. I realise that good plant growth often depends on a delicate balance between correct lighting, water condition and nutriment which I may not have achieved in this tank, but I do not have this problem with 13 in. tanks and I have heard similar complaints made by other fishkeepers.

I have also noticed, while waiting my turn in aquarist shops, that the owners of large aquaria (which are quite likely to be deeper as well as longer) usually ask for 'large' plants; is this perhaps the secret—not to start with tiny plants and cuttings but to get them off to a good start with plants already about 6 in. high? In any

case, there doesn't seem to be any particular magic about the depth of 18 in. It does not automatically ensure good plant growth.

London, S.W.3

S. PATTERSON

I DO not think that increasing the depth of an aquarium can do much to help one improve 'artistic layout', as suggested by Mr Pepper and Mr Barron in their letter (PETFISH MONTHLY, May), unless the dimension from front to back is also increased. Banks of plants and rocks that are seen used to such good effect in aquaria on the Continent demand plenty of area as well as depth for their arrangement.

Cardiff

L. DAVIES

How to Set Up the Furnished Jar

By FRED UNDERWOOD

(Leamington & District Aquarists Society)

FIRSTLY, we prefer to standardise our entries by using the 6 in. by 4 in. by 4 in. show jars. We find anyone using the larger jars gains an unfair advantage, being able to use larger and better plants, also of course, larger fish. The judges in this district judge the jars as they would an aquarium, the main points being:

- (1) Plants—condition and variety used.
- (2) Fish (preferably of one species)—size, relation to surroundings (an Oscar is hardly suitable) and department.
- (3) Technique—layout of plants, rocks etc.

I find that very fine gravel or silver sand as compost is best, as it holds the plant roots better and also looks better in respect to the size of the jar. No artificial substances must be used whatsoever. One of my favourite jar set-ups is the use of coal as background with young neons or cardinals as contrast.

Setting up the jar

Firstly wash the jar well. Fill the jar half full of water. Wash the gravel or sand very thoroughly.

Put gravel or sand in the jar. Add the rock or stone if used—the base of the rock or stone to be below gravel level. (Note: avoid rocks or



stones with sharp edges.)

Fill the jar with water to the neck, if not already full.

Select suitable plants, and ensure that they are free from algae and snails.

Trim plant roots to a minimum and then weight down with lead.

Place the plants in position, allowing some swimming space for the fish—but no roots or lead must be showing. *Cubomba* or similar plants

may be cut short, but must look natural when placed in the jar.

The water at this stage will probably be cloudy and contain bits, so carefully siphon off all the water, using air line tube so as not to disturb the set-up.

Half fill the jar with clean water that has stood for at least 24 hours, again using air line tube held against the side of the jar to restrict the flow so that no gravel or sand is disturbed, and then top up the jar with water from the tank containing the fish you intend to use.

The water should be approximately level with the shoulder of the jar, to allow sufficient oxygen in the jar. Doing it this way eliminates oxygen bubbles, which will cause the entry to be down-pointed.

More water can be added for transit to help prevent any movement, but, a word of warning—if labyrinth fishes are in the jar a reasonable air pocket is required; surplus water is drained off on arrival at the show.

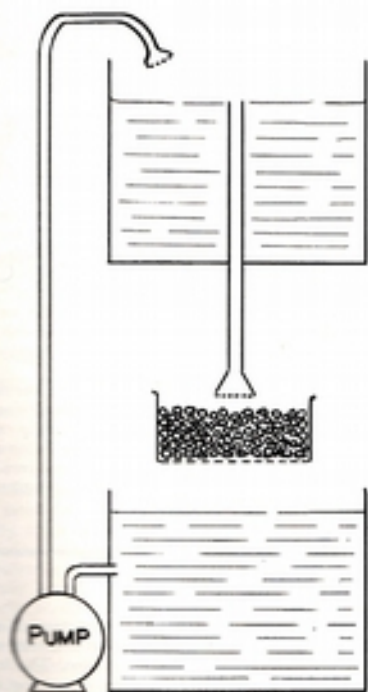
Riccia floating on the top gives a framed picture effect and also keeps the fish down, but not all judges favour this.

Finally give the jar a polish with a clean cloth to remove the drip marks, as the judges do not like dirty-looking jars.

What is Biological Filtration? — 3

A Water Circulating System with Biological Filters Incorporated

By Capt. L. C. BETTS



The pump returns water through a spray nozzle to the top tank from the main reservoir. This reservoir can receive water from several tanks by gravity flow, the water passing first through a perforated bowl containing the dinker or shingle which constitutes the biological filter.

THERE has always existed among fishkeepers a strong prejudice against running water from one tank into another. The main objection is the possibility, or more strongly the probability, of carrying disease from one to the other. This hypothesis rests on the assumption that disease is inevitable and if it is to come it is better to limit the effects to one tank than have them all affected.

My own personal view is that disease is introduced from outside sources and that if fish start with a clean bill of health it is a simple matter to keep them so. Actually fish that survive the first few weeks of their life stand an excellent chance of living out their life span free of disease, provided that they can escape the predators which normally prey on them, that adequate food is available to them and water conditions are according to their requirements. This statement also presupposes that only the physically fittest become the parents.

Therefore to set up a system of filtration for a number of tanks between which water is circulated depends very much on having clean healthy stock in the first place, seeing that no disease-carrying organisms are introduced (and this means doing without live foods such as *Tubifex* and in some cases *Daphnia*) and avoidance of overstocking with fish. Most of the common fish diseases are of bacterial origin, which arise, and are associated with, overcrowding. Even so, a biological filter will trap many of the disease organisms commonly found in unfiltered water.

Most aquarists with more than one tank usually mount the tanks on a staging, which means they are all on one level. This being so, water will flow from one tank to the other provided that a suitable connection is made. The easiest to use is a siphon, which need be nothing more than a short length of rubber or plastic hose. This method does not commend itself to the writer as the siphon action can fail when it is least expected. With a 3 or 4 inch lift from one tank to the next the flow will progressively slow down as gases collect in the bend of the pipe at the highest point. Furthermore, a temporary stop in the flow of water by a momentary stoppage of the

pump used to complete the circulatory system will break the siphon, which when the pump starts again will cause the water from the first tank to overflow.

It is better therefore to build an integral overflow pipe either into the bottom of each tank or through one end. I have tried both methods and found each equally satisfactory. For tanks with a slate base a $\frac{1}{2}$ inch hole can be bored, into which a $\frac{1}{2}$ inch pipe is fixed, the height of which is equal to the level of water desired. Alternatively, the glass end or side can be taken out and a similar hole bored to take a hose fitting. Since glass is not easy to drill, and when it is drilled there is a danger of it cracking in use, I prefer to make a concrete end, bedding in the hose fitting while the concrete is wet.

The Circuit

Let us discuss the general plan more fully. If only one staging of tanks is to be converted the general idea would be to spray the water through pipes into each tank separately, where it would overflow from each tank through the built-in pipe and be emptied by a spraying action over clinker or shingle, which constitutes the biological filter, and from there drain into a reservoir acting as a holding tank from which the water can be lifted and pumped into the tanks to complete the circulation. Thus the tanks would be at one level, the filter immediately below this and the pump reservoir below this.

An ordinary 15 gallon water tank (one that is not new, to obviate a poisoning risk from the galvanised iron) could be used for the pump reservoir, and supported across the top of it to constitute the filter could be an ordinary plastic bowl (of, say, 5 gallons capacity) with holes punched in the bottom to let the water drain through. The punched holes should be no bigger than $\frac{1}{8}$ inch and no smaller than $\frac{1}{16}$ inch, so that the shingle or clinker filter medium used in the bowl is not carried through with the filtered water. The short lengths of hose connecting each tank overflow pipe should be suspended over the shingle, and their ends should be modified to deliver the water in as small droplets as possible.

Aeration and Filtration

The mechanics of the operation fulfils the two requirements of a filter, namely aeration and the removal of unwanted materials suspended or dissolved in the water. Aeration occurs at the point of overflow, where water and air are drawn down the delivery hoses and freely mixed, and at the end of the hoses where the water passes through the air before reaching the filter. As the filter medium is not submerged, the molecular thickness of water formed as it passes over the shingle also takes up available oxygen, at the same time vitalising the organisms living on the filter medium and feeding on the impurities in the water.

In a two-bank line of aquaria, placed one over the other, the water can pass from the top tank to the tank underneath via a filter placed inside the lower one, with the master filter underneath the lower staging. If such a two-tier system is envisaged the pump will need to lift the water at least 5 feet.

Under working conditions it will be found that the accumulated humus will tend to collect in the bottom reservoir and the aquaria remain relatively free from sediment. Because the water is circulating continuously, the temperature will remain constant in all the tanks and at all levels of water. There is a distinct advantage in this, for there will be no hot or cold areas for the fish to lay about in and they will be found swimming at all levels of water. The mild current of water running through each tank will keep the fish swimming, active and healthy and the larger fishes constantly active will not become heavy and fat.

I have proved the reliability of such an installation beyond doubt, and maintenance consists chiefly in looking after the pump. However, a quick look night and morning is advisable to be sure a small fish has not become jammed in one of the overflows; a plastic funnel with the wide end covered with perforated plastic sheeting and the small end jammed into the overflow aperture will ensure that this does not take place. As time goes on, usually after 3 months in the summer and 6 months in the winter, the clinker in the filters will become clogged up with debris. It is then a simple matter to remove the filters, give the clinker a rinse under a running tap and put it all back again. There is also a loss of water by evaporation, but a top-up once a fortnight takes care of this.

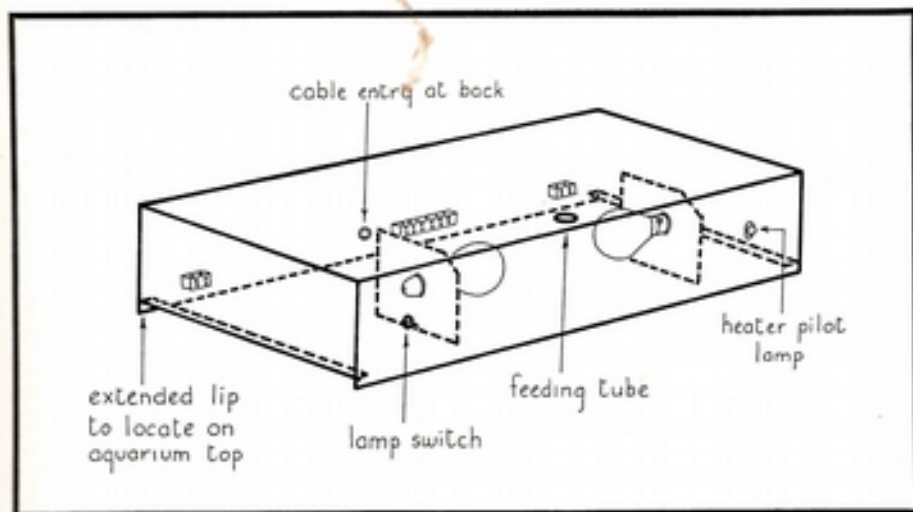
Avoid Overcrowding

One last word of warning. Biological filtration undoubtedly increases the capacity of an aquarium so far as the number of fish each will hold. There is a serious temptation to push this capacity to the limit. If this is done the pollution load on the filters will obviously increase and if there is a pump stoppage, perhaps by breakdown, of more than a few hours, the fish will quickly become distressed. This applies particularly in the summer when temperatures are high and the water is unable to hold the oxygen. It is therefore sensible to keep the fish population down to reasonable limits and not push the luck too hard.

Next we will talk about the man who wants to set up a small and compact installation sufficient to carry on a reasonably ambitious programme for breeding and rearing goldfish. Too often our fish houses become a hodge-podge of odd sized tanks not easily convertible to a system such as outlined above and a completely new start is more sensible.

Index to Volume I

MANY readers have written in appreciation of the Index to Volume 1 of *PETFISH MONTHLY* that was included in the centre of last month's issue. The four pages when removed can, of course, be inserted at the end of the *PETFISH MONTHLY* Binder, and we are pleased to pass on a tip from reader Mr L. K. Jenkins, who suggests that a strip of cellulose tape stuck along the middle of the centre two pages will strengthen them for use with a single wire in the Binder.



An Aquarium Hood

By PHILIP JACKSON

A neat assembly to form the aquarium cover and hide wires to lights and heating equipment is easy to make from sheet aluminium

THIS hood was constructed mainly to tidy up the top of the living room aquarium, and to form a control unit. The similarity of appearance and function to a radio chassis is obvious, and for the smaller aquarium the purchase of a conventional chassis of the correct size will save labour and time with little increase in cost. The type with strengthening gussets below the edge of the open side should be obtained, as these will stand on the top of the tank, giving the necessary clearance for components.

By reference to the diagram it can be seen that the hood is basically a sheet aluminium box into which the

lamps, switch and wiring, etc. are fitted.

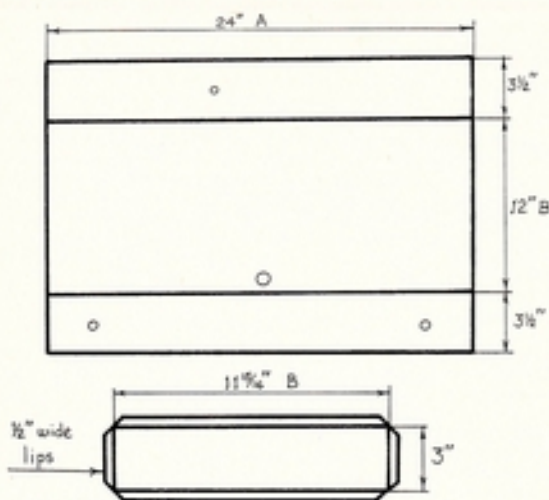
Terminal strips (PVC barrier strips), available from any radio shop, are used to connect and anchor the ends of the wire, and if 18 gauge single core wire is used no further fixing by cable clips is necessary. The wire is insulated with a PVC sheath, and should be examined before buying to ensure that it is tinned, otherwise corrosion will occur in the humid atmosphere beneath the hood. Incrustations of copper salts are unsightly and electrically inefficient, resulting in time in high resistance connections, over-heating and eventual short

circuits. Further, such salts would constitute a danger to the health of the fish if they accidentally get into the tank. For the same reason bakelite rather than all-brass lamp-holders are used. A good quality toggle switch should be used to control the lights. This type of switch is small, neat and requires only one 15/32 inch-diameter fixing hole. The pilot lamp is optional, but if desired should be in the hood, and not showing through the thermostat tube in the aquarium, which is, after all, for displaying fish and not gadgetry.

As these miniature neon lamps operate on approximately 100 volts ensure that the type purchased has a built-in series resistor for 200-250 volts supply. These lamps also are usually single hole fixing. A suitable neon lamp with resistor, completely encased in coloured plastic, is made by Radiospares Ltd. They also

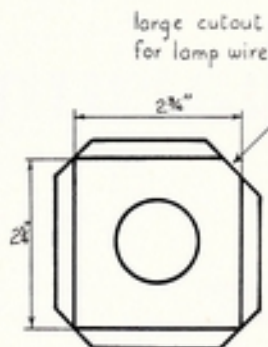
An Aquarium Hood

Continued

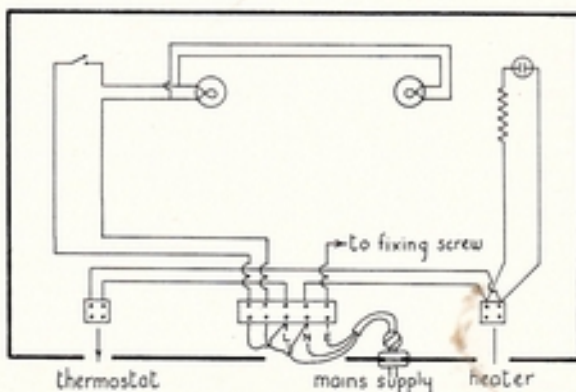


(Above) Dimensions and shape of the aluminium sheet used to make the hood. Only the sizes marked A and B need to be changed for tanks of sizes other than 24 in. long and 12 in. wide

(Right) Shape of the pieces of sheet used to form the lampholders



(Below) Diagram of the wiring for the electrical fittings in the hood



supply the toggle switch and barrier strips.

The original feeding tube was of metal fixed in position with aluminium soft solder to a hole in the hood, but in use it was found to harbour crumbs of dry food, which decomposed into a foul-smelling sludge. The metal tube was replaced by a glass tube, removable for washing, which can conveniently be made from a 1/2 inch-diameter lipped glass test tube. The tube is scratched completely round, with the edge of a file, between 3 1/2 and 4 inches from the open end. The scratch is moistened with saliva and touched with a red-hot wire or poker tip. A successful break may be expected after a few tries.

The material used for the hood is 20 gauge aluminium sheet, which is quite soft and easily worked with the simplest tools. The sheet can be cut fairly easily with a large pair of household scissors, but for a small extra charge the material may be purchased cut to size, leaving only a small amount of trimming and drilling to be done by the aquarist. The sizes given in the diagram are for an aquarium measuring 24 inches long by 12 inches wide (from front to back). These dimensions are lettered A and B respectively, and are the only ones requiring modification for other sizes of aquaria. With regard to the odd sixteenth, subtracted from dimension B on the side panels, this must be retained in any modification of size, to allow for twice the thickness of the metal in the bending operation. The sheet should be checked to ensure it is square and the marking out done accurately.

The holes for the switch, lamp and feeding tube are made by drilling a ring of small holes within the marked out circle, breaking through the webs, and finishing with a round file. After removing the small triangular corner pieces the sheets are ready for bending.

For the bending operation two battens are obtained, approximately 2 inches by 1 inch and of a length to

suit the length of the tank, preferably in hardwood. A batten is laid on each side of the sheet against the marked-out fold line, and the whole sandwich clamped with vice, G clamps or any other means to hand. (The table fixing of the kitchen mincer may be used, for instance!) The narrow flanges are bent over by tapping gently with a rubber hammer or a mallet but the wider panels are first folded over by hand, followed by squaring of the edge with the mallet.

The original hood was pop-riveted, but as this requires a special tool, plain aluminium rivets may be used, or more practically one could stick the panels together with an epoxy resin such as Plastic Padding. The brackets for the lampholders are similarly bent and fitted. The bracket corner with the largest cut-out is placed in the corner of the hood to provide passage for the lamp wires. At this stage the outside of the hood is painted to match the aquarium frame, leaving the inside bright. The fixing of the components is done next. Small nuts and screws are used for the terminal strips.

A diagram shows the wiring layout, which is self-explanatory. Notice only need be drawn to the rubber grommet in the cable entry hole, and the knot in the main cable, which with the associated loop obviates any pull on the connections.

The cover plate for the top of the aquarium is made from $\frac{1}{2}$ inch clear Perspex sheet, held in place by the aluminium clips sold for the purpose. A 1 inch-diameter hole is made in the front edge to suit the position of the feeding tube, and two notches are filed in the back edge to allow the passage of the thermostat and heater wires. These wires should be long enough to allow the hood to be lifted without moving the heater and thermostat. After a short period of use the Perspex develops a bow, with the convex side towards the water, which provides a drain for condensation back into the aquarium.

When cleaning the aquarium the front of the hood is lifted upwards and backwards until the back rests on the back of the tank top.

This hood has been in operation for over 2 years and has provided a neat solution to the problem of adequately housing and controlling the various electrical devices needed for a decorative tank.

For the Community Aquarium

Limias are Likeable Livebearers

IT is surprising that the limia should so seldom feature in the list of livebearers suggested to the newcomer to the hobby as a fish suitable for the mixed community tank. Not as colourful as the platy, nor as prolific as the guppy, it is nevertheless a very handsome, vigorous fish that is completely suitable for the community tank and to which it makes quite an unusual addition. Guppies, mollies, platys and swordtails are almost constantly available as regular stock in the aquarist shop. This is not true of the limia, but the species most likely to be on sale is *Limia vittata*, native to Cuba.

Its general colouring is sometimes somewhat disparagingly described as 'drab olive'. In fact, the coloration, though delicate, is a pretty golden shade lit by a bluish sheen when seen in some lights. The male has additional colour in its lemon-yellow fins, black-dotted dorsal and caudal fins and dark vertical bars near the tail. At maturity the male can be some 2-2½ in. in length, and the female may be anything up to 4 in. long. Despite their size they are extremely peaceful and are not likely to harm smaller varieties. In fact, they may take quite a time to settle into a new tank and hide away a great deal at first in the plant thickets.

This general amiability of the Cuban limia extends also to its owner in their whole untroublesome nature. Though, like most of the limias, they are a warmth-loving species and ideally do best in a sunny, well-planted tank at a temperature of 80°F (27°C), they are very hardy and can accommodate water changes and drops in temperature without taking harm. They also present no problem with regard to feeding, as they are omnivorous and will eat both live and dried food readily. Like the mollie, they enjoy grazing on algae and, without harming the plants, do well in tanks where this requirement is provided.

Typically, the breeding of the Cuban limia in the community tank supplies just a sufficient quantity of new stock to make their growth a pleasure rather than the headache that the disposal of the hordes of guppy fry forms for the new tank owner. The largest females can be extremely prolific, producing anything up to 200 fry—but they are also prodigious fry-eaters. Those newly born fish that do survive are comparatively large and will soon grow into handsome counterparts of their parents.

Twenty-four to 36 hours later they will not be heeled over on one side but up on an even keel and are able to swim a short distance before resting again. Now pour into the tank a 2 lb. jam jar filled with rich clear Infusoria. Be absolutely sure that there are no cyclops in this culture, for these will seize the neon fry, kill them and devour them.

The baby neons will continue to swim around in the bottom inch of water in the breeding tank; as the water becomes a little cloudy with the Infusoria the transparent fry are more difficult to see, but with a spy glass look along the lower sides of the tank and you may see two tiny black dots close together. On closer examination you will see that these are the two eyes of a fry as it clings, tail down, to the side wall of the aquarium.

I have read articles in which it is stated that the tank must be blacked out and the baby neons when hatched will be seen hanging below the water surface. Of my 35,000 neons, never have I seen one in this position; they are always on or very close to the bottom. It would seem to me that such statements prove the tank is too dark and the fry must be making an effort to reach the light. This means they must expend a great deal of energy, which at this weak stage they cannot afford to do, compared with mine which lie resting on the bottom most of their first 2 days.

In 5 days the fry will take newly hatched brine shrimps, though Infusoria should still be given as well. After 12 to 14 days a little micro worm can be added to their diet. The first sign of colour noticeable is the brilliant blue over each eye, but when the fry are $\frac{1}{4}$ in. long, the blue line on the flanks is clear and the red on the underside of the belly to the caudal peduncle is showing.

If you have a large spawning, the young neons will need to be transferred to a larger tank when 4-6 weeks old. However, if a few fry are given a 24 in. by 8 in. by 8 in. tank kept at 80°F (27°C) and well fed, these can be breedable at 12 weeks old. Each pair can be spawned every week in the way described, but if this is kept up over 4 months, the parents can be weakened and a few babies in the later batches of fry will develop 'neon disease' at an early age and the numbers showing this weakness will mount with each succeeding spawning. Going on breeding such parents is not necessary since the babies from the first batch will now be 16 weeks old, and themselves capable of breeding. So breed from these, and neon disease will disappear immediately, as if by magic.

Keep some of your stock—do not part with all of it. You will find your own bred neons much larger, stronger and more colourful. Imported ones suffer many changes of water and conditions before they reach you—to say nothing of the number of immersions in antibiotics they have undergone. In my experience I have found it possible to breed and raise three generations of neons before I could get into a strong fit condition an imported neon that was at least 12 weeks old when acquired!

So far I have not mentioned cardinals, but treat these exactly the same as neons. They are not such ready spawners; six or more pairs of neons put out on the same day will spawn before one pair of cardinals may do so. However, whenever neons spawn some eggs will turn white; maybe these are just not fertilised. But with cardinals, though not so eager to spawn, once they do all the eggs seem to hatch. I have never yet seen a cardinal's egg turn white. I have found just one other small difference between cardinals and neons. Neons will survive in much stronger, darker peat water than cardinals, who do not like it when it is a deep reddish brown.

Quite a number of aquarists are now breeding neons regularly. All I know so far have told me that they follow exactly the instructions given in my book *ALL ABOUT TROPICAL FISH* and related in these articles, so there can be no doubt now that following my method has proved it can and does work. Success has been recorded in widely separated districts and thus it is not something peculiar to this area.

I know of one beginner who had never bred a fish, not even a livebearer, and after three attempts succeeded in breeding his neons. His first two attempts failed only because he was over-anxious to get on; there is little doubt in my mind that as he had not used a testing outfit he tried his fish in peat water that had not softened sufficiently. He tried again 2 months after the first attempt. Still the water was too hard, though it must have softened a little. He then waited another 2 months and now the water had reached the required softness and he succeeded. I understand he had only 16 babies growing on, but the water is still getting softer and he can expect greater numbers as time goes on.

Do not try to speed up the peat-water preparation, and never boil it with the idea of using the brown extract. It is much too strong and will kill your breeding neons in an hour or less.

Personal Comment

Continued from page 92

patented foods which one drops into the tank in the form of one lump before you set off for the sun. No doubt they are quite effective in their way, but I have a certain nasty feeling about them.

The usual objection to the practice of letting your neighbours feed the fish is the worry that, as they are kindly and soft-hearted people, they will certainly over-

feed the greedy little brutes. The only way I know of overcoming this is to let them see the fish at feeding time, and then throw a little food in 10 minutes later. This usually convinces them that we are not in the habit of keeping them within an ace of complete starvation. Whatever arrangement you come to, don't forget that some form of appreciation to whoever looked after your fish is an absolute must. The form of this must be a matter for individual taste. This column this month is dedicated to our good friends and neighbours at The Cottage across the way, who, undaunted, successfully looked after all my fish during my 1966 summer holiday and who, as a consequence of this public tribute will, I fervently hope, follow suit this year!

BREEDER'S NOTEBOOK

Spawning the Red-Tailed Black Shark

By A. M. DEAKIN

BOTH the male and female fish were all black, except for their caudal fins, which were orange-red. There was no white on the fins of either fish, but the bodies of the males were slimmer and slightly hollowed. The ages of the fish were unknown as they were purchased as adults, but the male was about 6 inches long and the female about an inch shorter.

The fish were spawned in a tank sized 24 in. by 12 in. by 12 in. The bottom was covered with gravel and rockwork placed in one corner. This was then screened with plants placed in front of the rocks. The pH of water used was 7.8 and the hardness 18 degrees. Temperature was 78-80°F (25-27°C).

The fish were kept separate and then placed together in the tank in the late afternoon. They should settle peacefully, swimming side by side, but if they appear aggressive towards each other they must be removed and placed together again the following day. The following noon I saw about 40 eggs on one of the rocks. The male would not allow the female anywhere near the eggs, so I removed her. Two days later the eggs hatched, but within the next few hours the fry disappeared.

I decided to try again with the pair, but I first treated the water with Blackwater Tonic. I used the same water, tank etc. as before and the fish spawned again. The fish were separated for a week before I achieved a successful spawning. Again there were approximately 40 eggs, and I managed to rear 20 young ones from the spawning at the beginning of July. When I saw the eggs, I removed both the male and female this time and placed an aerator

stone near the eggs to keep a steady flow of water over them. As soon as the eggs hatched, I put some Biol in the water and kept them on this for 5 days after they became free-swimming. After that I fed with Biol and brine shrimp. Rearing the fry then was simple.

The young fish were silvery grey. When they were ½ inch long the dorsal fin became black, and later the body also turned black. One interesting point is that all the young fish had white tips to the dorsal fin, so it would seem that the white fades as the fish reaches adult size and age.

I had hoped to have some of this spawning in the breeders' class at the B.A.F. at Belle Vue last October. I took along eight of the young, but unfortunately four died in transit.

I believe that the reason for the scarcity of spawnings of the red-tailed black shark is that there seem to be very few males around. As an F.N.A.S. judge, I visit a lot of open shows and during the last year have only seen one benched that I considered to be a male.

A friend of mine at Sheffield has had a pair spawn in the community tank, but the eggs were eaten. I tried again recently to breed some more but the male knocked the female about to such an extent that she died.

Transatlantic TOPICS

The United States granted the Philippine Islands independence in 1946, so strictly speaking they don't come under the heading of this column, but as the islands are the home of what must be the smallest fish in the world, a few words might be of interest. Another reason is that I feel aquarists have sadly neglected this species when shopping for tank occupants. Despite its high-sounding name (*Pseudakia pygmaea*), this little fellow reaches an average length of only three-eighths of an inch, maximum about seven-sixteenths.

That is not much larger than an ant. Surely the tiniest backboned fish to swim in any creek?

By JIM KELLY

Unlike many other aspects of the Pet Hobby our branch has the big advantage of no odours. I realise that when the odd tank 'goes off' it can smell to high heaven, but generally speaking fishkeeping

shouldn't offend the touchiest of nasal organs. If it does, then look to your methods. Although used to whacky appliances, I think that what I am about to describe really is the end. It takes the form of an electronic deodoriser, based on the principle that negative ions have odour-destroying capabilities, on sale in the U.S.A. and guaranteed to keep your fish room free from smells. It costs the earth, but if it keeps your fish tanks smelling like—well, nothing... although that would probably be the state of your bank balance after buying such an apparatus!

• • •
Modern air pumps are comparatively free from mechanical failures.

Why then do they seem to break down so frequently in some aquarists' hands? The reason, according to the Aquarium Pump Supply Company, U.S.A., is back pressure. A sheet issued by this firm states that before connecting your air tubing to your pump you should first blow gently through the system; if everything is in order air should flow easily and you shouldn't get red in the face with the effort. If you do then there is a blocked filter system or clogged air

stone; it tells you something is wrong. The firm's statistics on pumps returned for repair show that 79% of the pumps returned could have been kept going if fishkeepers would carry out this blowing test from time to time. When systems become clogged a back pressure of air develops and damages the pump mechanism.

• • •

Vern and Jean Parish are well

known in hobby circles in Indianapolis; in fact apart from running a very nice aquatic store, Vern is also president of the local club. Favourite holiday spot of theirs is Florida. To those who cannot go out and collect their own specimens for their tanks here are some my friends have netted out of the beautiful Okefenokee Swamp: *Mollinisia latipinna*, *Heterandria formosa*, *Gambusia affinis*, *Elassoma evergladei*... now doesn't that make your mouth water?



Guppy Comment

By
BILL ARMITAGE

SOME guppy breeders use a lot of tanks for their breeding operations, and are inclined to impress this fact upon beginners, but beginners shouldn't let this deter them. A battery of tanks are very impressive and very often quite an asset in the hands of an expert. The novice can, however, make a good start with two 24 in. by 12 in. by 12 in. tanks, provided that they are partitioned.

Two tanks of these proportions are far handier than four smaller tanks. A good strain of guppies can be established and successfully maintained with such a set-up, and no additional tanks would be required. The beginner would be well advised to make a start with as small a number of tanks as possible, rather than a large number which he may find unmanageable later on.

• • •

It is always a pleasure to know that some of the advice offered in 'Guppy Comment' is being appreciated. At the A.G.M. of the Fancy Guppy Association the matter of the sale of stock was discussed, and it was decided to permit members to advertise stock for sale in the F.G.A. Journal. When 'Guppy Comment' first advocated advertising stock for sale it caused some controversy, but this it would appear has now been

resolved. The same meeting also took another lead from this page when a proposal to include a list of the names and addresses of the sections in the F.G.A. Journal received a unanimous vote. A similar list was featured in the March issue of PETFISH MONTHLY.

The matter of fish sales by aquarists was also taken up by the trade journal PET STORE TRADER, and one of its readers wrote in to say that a distinction should be made between sales forming part of the carrying on of a business and sales of livestock bred in the course of a hobby. He wrote: 'In my opinion section 7(1a) and (1b) of the Pet Animals Act, 1951, clearly distinguishes between these two facets and indicates that licences are not required by people selling fish bred by them and acquired by them in the course of their hobby. Of course, if the hobby became a full-time affair, in other words a business, a licence would be necessary.'

• • •

Jim Kelly's lecture entitled the American scene is a must for all aquarists. Those who have already heard it will agree there is something of interest in it for everyone. A point of outstanding interest for British guppy breeders made by the lecturer

is the large number of entries per show per exhibitor, and the fabulous prizes to be won at American shows. It is highly improbable that we British breeders will ever attain such a high average of show entries, but surely something could be done about our prizes!

• • •

On Sunday, 4th June, the second International Guppy Show will be held at the Drill Hall, Ardwick Green, Manchester. This show is organised by the F.G.A. and is the Mecca of guppy breeders. Exhibitors and exhibits will be there from all parts of Britain. As the membership of the F.G.A. has increased considerably since last year's show, it is only reasonable to forecast that the record entry of last year will be easily broken. Open classes will receive the same care and attention as members' classes and will be judged by grade A judges. This show will be long remembered by novice and expert alike. Readers are recommended to take this opportunity of seeing some of the finest guppies in the world.

• • •

Quote of the month: 'There would be fewer rabbit jokes if more people knew about guppies.' — FINCHBAT (Australia).

What's New?

Some of the products here mentioned were on display for the first time at this year's British Pet Trade Fair (organised by the PET STORE TRADER), and should be reaching the shops soon.

Plastic Bow-fronted Tank

WHAT seemed to us likely to be a very good buy was Hyware's Bow-fronted Aquarium, a moulded one-piece all-plastic tank. Measuring 18 in. by 12 in. by 12 in., this attractive unit is complete with a well-designed cover with sliding apertures for feeding. There is also an inner condensation tray to prevent moisture from coming into contact with the lamp unit and to prevent excessive evaporation. Provision is made for heater and thermostat cables to pass under the canopy and holes in the underside of the canopy allow a 30-watt strip lamp to be fixed there. Price of the aquarium complete will be about £3.

External Dial Thermometers

TWO very attractive-looking new dial-type thermometers suitable for aquarium use are now available here from Germany. The cheaper one of the two (12s 6d) is about 2½ in. in diameter and has a chromium-plated rim. Its face is marked in large clear black figures with both Fahrenheit and Centigrade scales. The red pointer shows up clearly and the thermometer is attached to the outside of the tank by peeling off a protecting strip at the back and pressing it firmly to the glass. The other thermometer,

looking much more like a miniature clock, is also fitted externally to the aquarium.

Walls You Can Bend

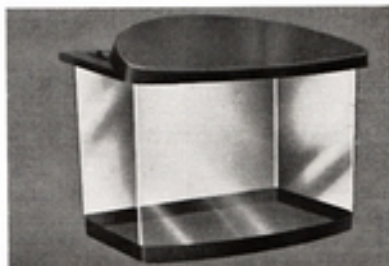
ON display at the Fair with the well-known Arbe Perspex aquarium range was the new Aquarium Stone Wall. This really looks like a wall of miniature stones and is made of bendable plastic so that the 19 in. long and 2½ in. deep strip can be formed into curves or angles of unlimited variety as well as being used in straight runs. Moderate heating from the steam of a kettle is all that is required for the wall

plastic closure of the pack provides a convenient measure for the amount of powder to treat 10 gallons of aquarium water. The contents of one pack, price 5s 11d, are sufficient to treat at least 80 gallons.

More Freeze-Dried Foods

WITH the wonders of freeze-drying extended to the fish food range, there seems to be no end to the variety of foods that we will be able to offer in this form to our fish. Now even water fleas are available freeze-dried. Note that there is a big difference between the more familiar 'dried' *Daphnia* and the freeze-dried

One-piece moulded plastic tank by Hyware, size 18 in. by 12 in. by 12 in. Base and cover are black.



to be bent. The plastic is thin and although very light it is kept in position in the tank by projecting lips at the rear which are held by the gravel banked behind the walling.

White Spot Remedy

A NEW cure for white spot disease and fungus, about which we have received favourable reports from aquarists, is **Acurel Q**. This product has been developed by Bioquatic Laboratories, of Sheffield, who tell us that during the initial research into its effectiveness it was found to be free from undesirable after-effects: it does not discolour aquarium water, cause sterility in fish or interfere with the growth of plants. It has been marketed as a powder rather than in tablet form to give high solubility; the hollow

product: the removal of the water content from freshly collected *Daphnia* by the freeze-drying process leaves untouched the oils and vitamins that make the water flea such a valuable food. **Fresh-frozen Live Daff**, marketed by Aquaculturists (Livefoods) Ltd for retailing at 1s per bag, is a pack containing enough fleas to give a 2 ft. community tank of fishes several good feeds.

Two further additions to the Miracle range of freeze-dried foods are **Fish Nip** and **Liver Treet**. The former is prepared by feeding the tubifex worms on liquefied meat before their freeze-drying and is sold in rigid plastic containers at 4s 6d for 5 grams. The **Liver Treet** is claimed to be very high in protein, composed as it is of liver to which bovine blood has been added before the freeze-drying is done. A 10 gram pack of this costs 6s 6d.

A Sand-Spawning Annual Fish



Austrofundulus myersi

Photographs by T. & K. PAYNE

JUST over twelve months ago, a South American annual fish came to this country, known to ichthyologists as *Austrofundulus myersi* and found in small pools and ponds in parts of Venezuela. The fish was named in honour of Dr George Myers, the well-known ichthyologist.

The fish itself is quite large for an annual species, larger in fact than many of the *Cynolebias* and *Pterolebias* found around the same area, and it turned out to be quite a beauty when in full breeding colours. This species first started to spawn when only 1 inch long, but the maximum size was well beyond this. In only a short space of time the male grew to just over 6 inches; the female was considerably smaller, more in the region of 2 inches, and considerable damage did result at times by the more boisterous male, during spawning.

The body coloration of the male was light tan to olive green, with a mottled pattern of darker browns and the belly region and lower parts of sides greyish brown. The mottled appearance filters to green and gold spots towards, and extending through to, the caudal peduncle. This pattern even continues half way into the caudal. This scaled part of the caudal fin only appeared with the fully adult fish, at about 4 months old.

The caudal fin has large extensions at the top and bottom lobes, and the main colour of this fin is metallic green, edged with black. Many more extensions occur with age, giving the appearance of a comb tail. The pelvic fins are large and paddle-shaped; very little colour is in these fins, but the anal fin in breeding colour is bright red with a pale bluish border. A dark almost vertical bar extends through the yellow eyes. The dorsal and anal fins are pointed, extending half the way along

the large caudal fin, giving the fish a streamlined appearance.

General colour of the female is rather a pale olive, with a faint mottled pattern. All the fins appear rounded; she lacks any really striking markings, but the fins are never closed even when resting.

According to reports the species was short-lived and only spawned twice before death. We found they were quite long-lived in the aquarium and they spawned continually over a period of many weeks. First attempts at breeding were made in a smallish breeding tank

By PAUL STOKES and E. J. SEYMOUR

(British Killifish Association)

(18 in. by 10 in. by 10 in.). The spawning medium was well-washed silver sand (used because this is clean, has rounded edges and is not too sharp). Peat could have been used, but this turned out to be a fish that did not dive into a medium to spawn; the eggs were laid just under the medium. Sand proved ideal for two reasons: first because the eggs could be found quite easily, by the use of a glass rod that gently stirred the sand; the eggs, being lighter than the sand, came to the surface and could be dip-tubed out for inspection. Secondly, if peat had been used the eggs would have been difficult to find as the eggs had small adhesive 'hairs' that peat would cling to, making it almost impossible to detect them.

The silver sand used as a medium to collect the eggs was placed in a layer about 1 inch deep in a sandwich box about 8 in. long by 3 in. wide, placed in the aquarium with a nylon mop as a refuge for the female. The water used was soft and slightly acid (50 to 80 pp.m., pH 6.8 to 7.0), but this is not too important as the sand will gradually build up the hardness over a period of weeks. Depth of water was kept at 6 inches as most fish during spawning spawn in the shallows. The temperature was kept on the low side; although killies breed at all temperatures, high temperatures only shorten their lives, or so we're told.

The eggs are collected with the use of the dip tube or glass rod as described. An alternative method is to filter the sand through a fine net or sieve, the eggs remaining behind. The eggs are collected about twice a week. The parents do not seem put out by this and the male usually hangs around for any eggs that are missed. They are quite large and just under the sand.

The pair, when they spawn, complete a full embrace, the male wrapping his dorsal and anal fin around the female, as a male fighter does in their embrace under the nest. The eggs are buried by the male, with a flick of his caudal fin, and only single eggs are laid. The breeding takes place at first light and evening.

The male proved to be very boisterous when the female was out of condition; it would pay to use at least two females during spawning, but as always, females are hard to come by. From the eggs hatched there proved to be a majority of males. In all cases the female must be kept well fed during spawnings, and she should have conditioning periods about every 3 weeks.

The eggs after collection are placed in a mild salt solution for the first 10 days. This gives the eggs chance to develop in the first stages and cuts down the chances of fungus attacking the fertile eggs; any that do turn white are removed, before they are partly dried. In Nature the pools with *Austrofundulus myersi* dry up, as with most annual fishes. Artificially this drying out period is done in well washed and boiled peat (boiling

kills any life within the peat, such as bacteria etc.). Only a small amount of peat is needed, about a large tablespoonful, squeezed to rid it of as much water as possible, or as the books say until it is like moist tobacco.

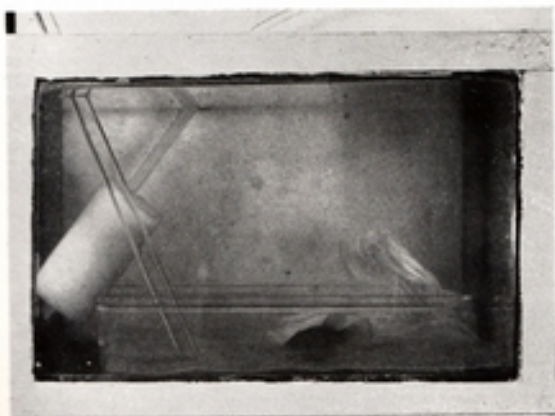
The eggs plus the peat are then sealed in a plastic bag, which stops the peat from drying out completely. This is kept slightly warm (60-70°F; 15-21°C) for 4 months, when the eggs can be inspected for development. Some may be ready for hatching. Those that are not are known as resting eggs; these only usually occur with older fish. The ones that are ready for hatching have a gold ring around the eye, and can be taken out. The others are left until such time as development does take place, which may be many more weeks (but you are in no hurry!). They can be left until you are ready, as one does not want too many at one time.

The fully developed eggs are placed in a rain water around 70°F (21°C), only a shallow volume being used. Within a few hours they become free-swimming. No yolk sac is present as this is absorbed during development; they can be fed straight away, on, believe it or not, *Daphnia*. A large food, but they take it and they grow. At 2 weeks they are over an inch long. The lower jaw projects considerably in front of the upper, so that the mouth opens upwards, making it very large for young fry.

One word of warning. The males do fight, and the only way to stop them is feeding with mainly live foods, to be fed in bulk. Then they will rest until the next meal; if this does not arrive they will start to fight their brothers. Fins are then torn but surprisingly they heal up very quickly, with no obvious marks, in around 4 days.

Although *Austrofundulus myersi* may appear from these remarks to be worse than the cichlids, they are being used quite extensively as a mosquito control species and are an interesting and challenging killifish to breed, one which also has a great deal of colour.

(This article was received for publication before the tragic death of Mr Paul Stokes, reported in last month's issue of PETFISH MONTHLY)



In the spawning aquarium (18 in. long) are seen the plastic box containing silver sand, and showing a dip tube reaching into it, and a sponge filter (left)



Eggs are stored in moist peat inside a sealed polythene bag. The first ones will be ready for hatching after about 4 months if kept at 60-70°F (15-21°C)

Feeding

This presents no problem as marine fish will eat almost all the same foods as those accepted by freshwater tropicals. Feed four times a day. Foods such as white worm, daphnia, tubifex, blood worm, chopped shrimp, chopped cod, fish roe and even dry foods will be taken voraciously when the fish are acclimatised to them. Invertebrates will take shrimp, and most anemones like earthworms, so if you have a garden compost heap you should always have a plentiful source of food. The bigger fish will always take guppies up to 1/2 inch long, so here is another source of live food. Being a guppy man at heart I probably shouldn't say this, but I only use my 'scrubbers' and, it's a quicker death than pouring them down the drain.

Diseases

Sooner or later your fish are likely to be affected by disease and I have found the predominant one to be the parasite *Goussia*. This, however, is easily cured and has the appearance of freshwater velvet disease, having a greyish fur which very quickly covers the body. Its life cycle is very similar to white spot and so the first action to take is to raise the temperature to 90°F (32°C). Also step up the ozone output to, say, 15/20 mg. per hour. Next ask your chemist to make you up a solution of 1 gram of chemically pure copper to a litre of distilled water. This is your stock solution and you dose your tank at the rate of 6 ml. per gallon. As copper is very lethal to fish do not exceed the recommended dosage.

Once your tank has had the copper treatment it will not be suitable for the invertebrates as they are susceptible to the slightest trace. Accordingly, if you have or wish to possess any of these it is better to treat the infected fish in your quarantine tank and thus avoid killing your invertebrates. There are other diseases which occur from time to time such as fungus and *Ichthyophthirius*, but these are rarely encountered and as they can be satisfactorily cured by proflavine, acriflavine and orlavine at the same strength as that used for freshwater tropicals, they present no problem. Methylene blue is a reliable and safe treatment for ick but this has the disadvantage of staining everything blue and therefore the fish must be treated in a separate container void of all coral etc.

Since using ozone, the only disease I have encountered is *Goussia* and my fish have all responded to the copper sulphate treatment.

All in all, provided one doesn't overfeed and follows the above-mentioned rules there is nothing to fear with marines—why not have a go? To possess a tank of these living jewels of the sea is, I assure you, most rewarding.

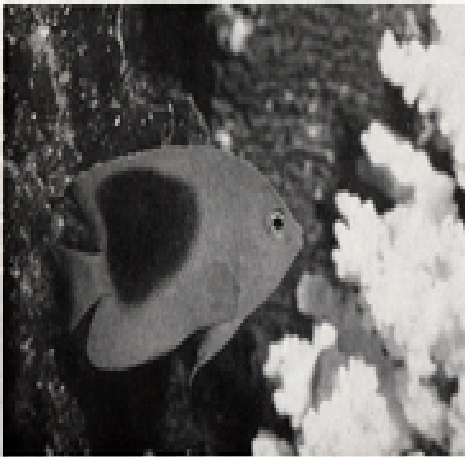
© PetFish Monthly

PETFISH MONTHLY Guide to

Tropical Marine Aquarium- Keeping

By VICTOR PARTINGTON

Photographs by
KAHL

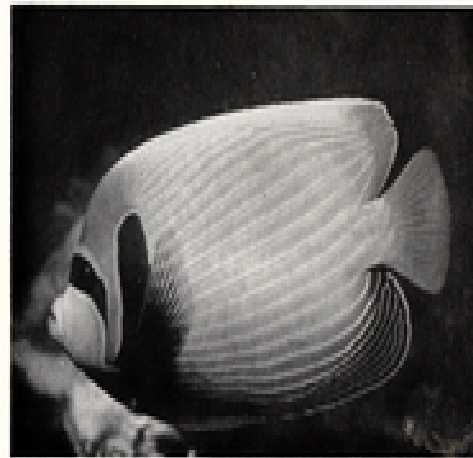


Rock beauty (*Holocentrus tricolor*)

SEVERAL years ago whilst on my way to London, I happened to be passing through an area in which there was a notable fish hatchery. Like any enthusiastic aquarist, I couldn't resist a quick call to see what fish were on display. During my brief visit I saw two stainless-steel tanks, approximately 30 in. by 12 in. by 18 in., in which were numerous brightly coloured tomato clowns and yellow-tailed blue damselfish.

These really caught my eye but, on enquiry, I found to my dismay that they were marine tropicals and not, as I had first thought, freshwater fish. However, I was so impressed by these living jewels of the sea that I decided I must 'have a go'. Unfortunately, on my return, I was informed that not enough was known about them and as a result, they had all died and so I resigned myself to the fact that until such time as these were able to be successfully kept, I would have to be patient and stick to the freshwater varieties.

Nowadays, however, this is not the case, for since the introduction to aquarium-keeping of sponges, power filters and ion-exchange resin, one is now able to keep these marine fish with very little trouble. However, there are certain conditions and equipment which are essential to their well being and rules which must be adhered to,



Emperor fish (*Pomacanthus imperator*): mature form

in circulation check density, pH and temperature again; if all are correct we are now ready to introduce our fish. Here we must decide whether we are to house one or two of the larger species or alternatively several of the smaller but no less attractive varieties. However, do not place new fish directly into the new set-up. Include only those that have been previously quarantined for a period of 10 to 14 days in a smaller quarantine tank, thus making sure they are free from disease. This may mean that you are able to purchase only two fish at a time but, believe me, it is better to be safe than sorry. This procedure applies to invertebrates as well as to fish, especially anemones.

Recommended Fish

I suggested that those new to the hobby should start with the easy varieties such as damselfish, amphiprions, chaetodonts, scorpionfish and triggers. Avoid the long-nosed species such as *Chelodan varrattae*, as these are more difficult to feed and seem to live mainly on algae which in a newly set-up tank is not yet of sufficient quantity to suffice. You can always try these later when your tank becomes established. Very soon your fish will become tame and their antics, swimming through and around the coral, are a sight to behold.



Emperor fish (*Pomacanthus imperator*): young form

I avoid the use of shells, sea urchin shells etc., as I have found these to quickly deteriorate.

Having furnished your tank, the bare places on the base require covering with a well-washed sand. This, however, should only be a thin covering, not more than 1 to 1/2 inch thick. A couple of handfuls is usually sufficient for this purpose, and I suggest either a well-washed silver sand or, better still, white calcined sand (the latter, however, is not easy to acquire).

Lighting

Any type of lighting can be used, just as with ordinary tropicals, but if fluorescent light is desired I suggest the Deluxe Natural tube. This tends to emphasize the reds such as in clowns, scorpions etc., and also has a good rendering of other colours, particularly white, which shows off the coral to advantage.

Fish Introduction

After letting the tank stand for 48 hours with ozone and filtration

Tank

As salt water very quickly attacks most metals, even stainless steel, I suggest the safest container to use is either all glass, all clear plastic or, better still, a plastic-coated frame and glazed with Glasticon 303 Aquarium Sealer. The size of tank depends entirely on one's pocket and the number of fish one wishes the tank to house, but anything less than 25 gallons capacity is in my opinion not really of much use, unless it is to be used for quarantining.

One important factor when choosing a tank is its height. I say this because in their natural habitat marine fishes usually abound in water much deeper than 22 inches, and as the deeper the water the greater is the pressure I suggest therefore a minimum height of 24 inches. I have, however, kept fish in tanks 15 inches high but the larger varieties seem to prefer the deeper sizes.

Filtration

An efficient filtration system is essential, and I suggest that only a power filter capable of completely turning over the tank capacity every hour is suitable for this purpose. By using an ion-exchange resin together with nylon wool as a filter medium, this is found to give sparkling clear water. The nylon wool, however, must be changed regularly and the resin recharged every 3 to 4 months to keep it effective.

Ozone

In my opinion this is a must where marine are concerned. Being a water purifier, it not only keeps the water crystal clear but also keeps disease to a minimum. It can also be used for the sterilisation of food and treatment of the disease parasite *Oodinium* when used in conjunction with copper sulphate.

Although ozone can be pumped directly into the aquarium, I think it is much better with the aid of a vibrator pump to force it through a reactor tube complete with skimming-cup. By this method any impurities are changed in the aquarium and are forced up into the skimming-cup and easily removed by simply washing this under the tap before replacement. In a tank containing 25 gallons I suggest setting the oscillator to 5 mg. per hour and gradually increasing over several weeks to 10 mg. per hour. This to be pumped through continually.

Heating and Temperature Control

Both types of equipment can be used for this purpose: either the combined heater thermostat, preferably the submersible type, or the individual models are also satisfactory. These, however, must be

made from plastic and the heater bangs must also be made of a plastic material, not rubber as rubber rapidly deteriorates when in contact with sea water. An all-plastic or all-glass thermometer is necessary and these can be easily purchased at reasonable cost. Through experience, I have found that a temperature which suits the fish best is a little higher than those usually suggested for tropical fish and recommend between 82° and 86°F (28-30°C).

Density

This is a very important factor for the well-being of marine fishes and must be checked at weekly intervals and adjusted accordingly. A density of between 1.022 and 1.026 is a good reading and I usually aim for the former. This is measured by a hydrometer, which can usually be purchased from your aquatic dealer at a moderate price.

Control of pH

A steady pH 8.2 to 8.6 is essential, as anything below 8.0 begins to adversely affect the fish. I keep my tank water at 8.4 and this is soon adjusted by adding washing soda which has been previously dissolved. However, add this solution slowly, otherwise you will get a snow-storm effect which might kill your fish. These precipitated flakes, however, will soon disappear with filtration. The pH must be checked every week and consequently adjusted. A reasonably priced test solution is cresol red indicator, which can be purchased from British Drug Houses Ltd. through your local chemist.

Sea Water

With artificial salt-water preparations now on the market this is easily acquired and is free from parasites usually found in that carried from natural sources. The salt should be dissolved and decanted so that no salt residue is allowed to settle on the tank base.

If after filling the aquarium there is found to be a film of salt on the bottom of the tank, then siphon this off with the aid of plastic tubing. Sometimes, if the salt is damp when purchased one has difficulty in dissolving it. This can nevertheless be overcome by boiling the residue in a vitreous enamel pan and decanting when cooled. Before filling the tank adjust the density to 1.022.

Furnishing the Aquarium

Having filled the tank and adjusted to correct temperature, density and pH, we are now ready to decorate it. Unfortunately we are limited in our use of materials. We must use only well-cured coral, sea fans, glass or non-porous rockwork; otherwise we are asking for trouble.

Coral is the most attractive and there are many varieties of different shapes and sizes which are very decorative. These, however, should



Damselfish (*Zonypia arcuata*)

always be well cured before introduction. The method to adopt is as follows. After soaking the material in a 50/50 solution of water and household bleach for 4 to 5 days, remove it and scrub well with a nylon brush, removing all loose and soft matter from and around the clump. Refill a plastic bucket with fresh tap water and replace the coral. This water has to be poured off and the bucket refilled daily with fresh tap water for a period of 14 days.

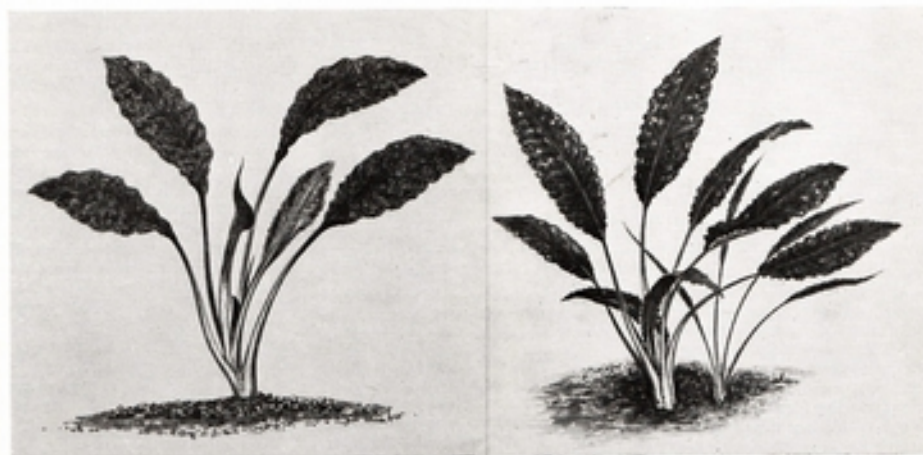
After this time let the coral dry out and leave it exposed to the air for one week, preferably in a draughty position. Then repeat the soaking process for one more week. This is rather a lengthy operation taking approximately 4 weeks in all, but is nevertheless necessary and in the long run pays dividends. Should, however, the coral be of convenient size to fit into a vitreous enamel pan, then this curing process can be shortened considerably by simply boiling the coral, pouring off the water and re-boiling for several hours after bleaching.

To add a little colour to the tank there are on the market pieces of coral which have been dyed in a variety of pleasing colours. However, be sure to buy these from a reliable source, one guaranteeing them to be non-toxic to fish. I have used some of this coral and find it very attractive.

Sea fans are another decoration but again these must be scrubbed and soaked until all the dead matter has been removed, leaving behind the skeleton only. Also there are some varieties of 'twiggy' type corals, which after having their shell removed, can be utilised to excellent effect.

Coloured Plants for the Aquarium

By C. D. ROE



Cryptocoryne nuri shown with flower (left), when growing out of water, and in the submerged form (right)

PERHAPS one of the most spectacular of all the coloured plants, when it is growing under optimum conditions, is *Cryptocoryne Blausii* de Wit. It was introduced into Europe in 1960 by Mr Somphongs Lek-Aree of Bangkok, and was named by Professor H. C. de Wit after Herr Alfred Blass of Munich. This plant closely resembles *C. siamensis* Gagnepain, to which it is closely related, the only difference being a very small variation in the inflorescence which can only be seen under dissection.

In the early stages of growth the two plants are indistinguishable but in strong growing conditions the leaves of *C. siamensis* appear to be larger and far more cordate. When well established in the aquarium *C. Blausii* is a rich wine shade on the upper surface with a rather more purplish colour on the under side, and the leaves are very bullate (dimpled) and have an extremely glistening surface. The inflorescence is short and broad with broad upper

expanded parts of the spathe bright yellow.

Specimens imported from the wild have sometimes been as high as 24 inches although good aquarium growth does not exceed 12 inches. Like most of the *Cryptocoryne* it does not do well in the presence of an undergravel filter. The plant is always difficult to come by and it will be some years before aquarium-grown stock is freely available.

Best growth is obtained in relatively soft water and this plant does not require strong light. The leaves are tough and not usually damaged by some of the larger fishes.

Cryptocoryne nuri Furtado is one of the most recent introductions, being only introduced about 1963 and it was not until late in that year it was positively identified. I had received some thousands of these plants but without the inflorescence; I carefully searched through the preserved specimens in the Herbarium at Kew Botanical Gardens and was able to match this plant with

reasonable certainty. When, around Christmas 1963, our first plant flowered I was able to make positive identification of it.

The colour is very variable, from a dark green to a light brown or even purplish brown, with dark brown marmorations and blotches and in the mature plant there often occur a large number of brilliant red spots. The edge of the leaf of the established plant is crinkled and when growing under strong light the surface becomes extremely bullate. The flower is bright purple. This plant takes about one year to establish itself, and it prefers soft water, although it can be slowly established in slightly hard water. Normal aquarium height is 5-6 inches, but wild plants imported have sometimes been in excess of 12 inches.

It can be propagated fairly easily although slowly by runners sent out from the established parent plant. It likes the higher temperatures and enjoys moderately strong light. *C. nuri* is not a scarce plant.

Readers' Queries Answered



Fin Congestion

I have recently purchased some fancy goldfish that now seem to be very sick. They hang about the surface and I have been told that the red colouring of their fins, that I am afraid I thought looked rather attractive, is in fact, streaks of blood.

These fish are almost certainly suffering from fin congestion, a condition favoured by overcrowded and dirty living conditions and an inadequate diet. As they are fancy goldfish the condition may have been aggravated by chilling. Replace their water with fresh water that has been standing for a couple of days in the same room as their tank and into which has been dissolved sea salt to the concentration of 2 tablespoons to the gallon. Keep their tank scrupulously clean, siphoning off sediment and droppings and replacing with water prepared as above. Keep the tank in a warm place and try to keep the temperature at a steady 70°F (21°C) with a very low wattage heater if necessary. Feed *Daphnia* and a good quality dried food and the fish should recover within a month.

Nipped Fins

Since my recent purchase of two Malayan angels, several of the other fish have lost part of their fins. Are Malayan angels known to be fin-nippers and will the nipped fins grow again?

Yes, Malayan angels do tend to be fin-nippers. They are moderately peaceful fish with medium-sized fishes, and it is more than likely that they would have caused no trouble; but the individual fish of this species does develop this tendency and owing to their great turn of speed almost any fish can become their victim.

The nipped fins will grow again though the rate of this varies. If the tank is well cared for there should be no danger of fungus growth, particularly if the water contains a little sea salt, which it may already do as the Malaysians are being kept.

Earthing Aquaria

Many books on tropical aquaria advise the earthing of electrical circuits in connection with tank heating. How should this be done?

The earth wire should be firmly attached to a terminal, made by fitting a nut and bolt to the top frame of the aquarium, which should be drilled for this purpose. However, earthing the aquarium should be undertaken only in circumstances where the surroundings of the tank can conduct current, e.g. on a concrete floor or in damp conditions. Some electricity authorities consider that to earth the tank when it is on a dry wooden floor, for example, may create a risk rather than remove one. Advice relevant to a particular condition can be obtained from local Electricity Board showrooms.

Melanomas

I have several half-grown red and black swordtails. Some time ago a 'lumpiness' developed on the black scales of the body near the tail. This was three months ago, but it does not seem to worsen or affect them in any way. Their father also developed an apparently similar complaint, though much nearer the head. What is this condition and is there any cure?

These swordtails appear to be showing the tumorous condition that often develops in fivebearers having abnormal amounts of black pigment. This is a cancer-like condition, is not infectious and cannot be cured. These fish would be of interest to

Dr L. E. Mawdesley-Thomas, Department of Histopathology, Field Station, Huntingdon Research Centre, Huntingdon, Herts., who appealed for such specimens for research in *PETFISH MONTHLY*, August 1966.

Anchor Worms

There appears to be a parasite in my tropical community tank. It can be clearly seen on the side of the fishes. It is about 1/2 in. long and is dark grey with a light V tail. Mostly these stick out from the side of the gill.

It seems likely that these fishes are parasitised by anchor worms (*Lernaea*). This is unusual in small tropicals but it is the only diagnosis that would fit the description. The fish should be transferred to a solution of sea salt made in some of their aquarium water (2 ounces per gallon)—with aeration if possible, but in any case without overcrowding. After about 20 minutes the fish should be returned to the aquarium. The treatment can be repeated after a day or two if any parasites are seen or if they re-appear.

Kuhli Loach

I have just one giant kuhli eel in my tank but I find he spends all his time lying in the sand and hardly ever comes out. Is this usual or should I have bought two fish of this type?

Kuhli loaches do not like strong light and your fish is probably very active once the tank lights are out. It would not affect its behaviour if another specimen were obtained.

Pond Thread Algae

The water in our outdoor pond keeps beautifully clear but the sides are covered with moss-like algae that can be pulled out in cotton-like skeins. We are told that copper sulphate will destroy this growth. If this is so, how much should be used?

Copper is extremely poisonous to fish and an amount as small as 0.5 milligrams per litre will kill large trout within a few hours. It would not be a suitable method to deal with algae in a pond containing fish. The only safe method is the tedious one of removing it by hand after twisting the strands on to a stick.



A SHOW planned by juniors with juniors in mind. That is the keyword of the **HUTTON GRAMMAR SCHOOL A.S.** second annual open show for tropical and coldwater fish that will be held on Saturday, 1st July. It is a show for junior aquarists only (under 18 years of age and/or still at school). Response so far from local clubs and schools has been good, but secretary Neil D. Swindlehurst is hoping that juniors from further afield will be able to make the journey to Preston. The show is divided into 11 classes and prizes and prize cards will be given for first, second and third in each class. Trophies will be given for best tropical and best coldwater fish, and for the competitor with the most awards. Benching time is 1.30 p.m. to 3.00 p.m. on the day of the show and, supporting the sentiments expressed by Stone and Lytham A.S. in *PETFISH MONTHLY* recently, it is

requested that entries should not be removed until after the prize presentation at around 5.00 p.m. Mr Cliff Walker (F.N.A.S.) will judge the entries. The show is housed in a large and pleasant hall and small competitions and entertainments have been arranged and, weather permitting, a school 1st XI cricket match versus Preston Grammar School. Come on now, junior fish-keepers! Show secretary Mr D. J. Radcliffe, Kindu, Todd Lane South, Lostock Hall, Preston, hopes to be inundated with requests for schedules and subsequent entries. How about it?

FROM the dozen people who turned up at the first meeting in March, 1966 to an enthusiastic current membership of over 50 is the success story of **AMERSHAM & D. A.S.** During the year there have been talks and demonstrations on fish breeding, setting up a tank, photographing tanks and plant growing; slide and tape talks, visits to local clubs and to the Hounslow and Hendon Conventions, and a very successful Christmas Social. The club's own show in October was well supported but it is realised that more publicity must be given to such functions in

future. It is hoped to keep up the variety of activities achieved during the year, and plans are already made for visits to a fish house near Cambridge, to the Three Counties Show in Reading and various competitions with other clubs.

The past year has been one of learning for the Club and the Committee wish to record their indebtedness to **HIGH WYCOMBE A.S.** whose members have supported Amersham's functions and whose Committee have given help whenever it has been required.

At the A.G.M. club officers elected were: chairman, Mr J. K. Harding (16 Highmoor, Amersham, Bucks.); secretary, Mrs V. Keating (62 Townsend Road, Chesham, Bucks.); treasurer, Mr L. J. Williams (11 Cookham Court, Park Place, Amersham, Bucks.).

HOUGHTON-LE-SPRING & D. A.S. held a most successful third annual open show at the beginning of April. Judges were Mr W. Catmull of Richmond, Yeeks, and Mr J. Robertson of Dunston-on-Tyne. The best fish in show award went to Mr R. Atherton (M.S.A.S.) with a scot. The Blue Riband trophy was won by Stockton A.S. with the

The Tide Waits for No Man

THE inland aquarist wishing to make a "collecting trip along the seashore would, somewhat naturally, be well advised to undertake a little research before arranging his excursion, for not only is it important not to arrive a few minutes after the tide has turned (thereby virtually wasting the trip) but it is also necessary to choose an occasion when the 'spring' tides are in force, since this will enable those areas normally under water to be examined.

The requisite information is to be found in a number of readily available publications: many almanacs (such as WHITAKER'S), the *A.A. HANDBOOK*, sailing and similar guides, plus occasional leaflets published by individual coastal towns. In the majority it will be found that the formula used in working out the exact time of tides at particular points is exactly similar:

- Ascertain the time of high tide at a standard port;
- Add or subtract the tidal constant of the particular point;
- Add approx. 6 hours 10 minutes to reach the time of low tide;
- Add 1 hour to allow for British Summer Time (when applicable).

From which the collector should deduct about 1½ hours for his collecting time.

The following Table is based upon this formula, and the dates selected are those on which a reasonably low tide can be expected.

Place	Tidal Constant	(1) 21st May	(2) 25th June	(3) 29th July	(4) 2nd Aug.
Aberystwyth	a -1:34	11:00	13:30	14:30	12:30
Milford Haven	a -2:12	9:30	14:00	13:00	12:00
Weston-s-Mare	d -0:25	10:00	14:30	13:30	12:30
Preston	d -2:16	8:00	12:30	12:00	11:00
Teignmouth	e +4:32	9:00	14:00	13:00	12:00
Devon	e -2:42	14:30	7:00	6:00	16:30
Lewesport	e -4:25	13:00	17:00	16:30	13:30
Whitby	e -1:23	7:00	11:30	10:30	9:30
Berwick	e -0:1	5:30	10:00	9:00	8:00
Wick	e -3:26	14:30	6:30	5:30	17:30
Oban	b +5:45	6:30	13:30	12:30	11:30
Ayr	b -0:39	13:00	7:30	6:30	5:30
Whitehaven	a -0:9	14:30	6:30	5:30	17:00
Preston	a -0:0	14:30	6:30	5:30	17:00

a Liverpool Low tide periods but NOT at the times shown
 b Greenock (1) (21st May and 4-5 days after).
 c Leith (2) (25th June and 1-2 days before and after).
 d Bristol (3) (29th July and 1-2 days before and after).
 e London (4) (2nd Aug. and 2-3 days after).

The list of places selected gives an overall picture for Great Britain; points between those shown can be estimated, although local conditions can affect times and depths of tides.

H. J. VOSPER

highest club points and the highest individual points award went to Mr J. Robertson of Peterlee A.S. who won the President's trophy. Details of the results are:

Guppies: 1, Mr G. Martin (Newcastle Guppy Club); 2, Mr W. Honeyman (Sunderland); 3, Mr T. Wrightson (Houghton). **Mollies:** 1 and 2, Mr W. Payer (Stockton); 3, Mr J. Robinson (Peterlee). **Swordtails:** 1, Mr T. Collins (Stockton); 2, Mr R. Dawson (Peterlee); 3, Mr J. Chamberlin (Stockton). **Platy:** 1, Mr R. Skyles (Newcastle Guppy Club); 2, Mr C. Ridge (Houghton); 3, Mr W. Jones (Peterlee).

Small barbs: 1, Mr F. Paterson (Stockton); 2, Mr E. Dunn (Peterlee); 3, Mr Lancaster (Middlesbrough). **A.O.V. barbs:** 1, Mr J. Robinson (Peterlee); 2, Mr M. Robinson (Peterlee); 3, Mr Mason (Middlesbrough). **Small characins:** 1, Mr Bowman (Stockton); 2, Mr R. Skyles (Newcastle G.C.); 3, Mr D. Robinson (Houghton). **Large characins:** 1, Mr J. Chamberlin (Stockton); 2, Mr W. Emmerson (Peterlee); 3, Mr J. Robinson (Peterlee). **Dwarf cichlids:** 1, Mr J. Robinson (Peterlee); 2, Mr F. Paterson (Stockton); 3, Mr Mason (Middlesbrough). **A.O.V. cichlids:** 1, Mr J. Purvis (Peterlee); 2, Mr M. Robinson (Peterlee); 3, Mr W. Honeyman (Sunderland). **A.S. fish:** 1 and 2, Mr R. Atherton (M.S.A.S.); 3, Mr Whitlock (Tadcaster). **A.O.V. labyrinth:** 1 and 2, Mr Whitlock (Tadcaster); 3, Mr Dodsworth (Hartlepool).

Sharks and lobes: 1, Mr J. Robson (Peterlee); 2, Mr C. Bridges (Houghton); 3, Mr Dawson (Newcastle G.C.). **Rubras and danios:** 1, Mr J. Hall (Houghton); 2, Master J. Williamson (Stockton); 3, Mr M. Robinson (Peterlee). **Egg-laying toothcarps:** 1, Mr Dodsworth (Hartlepool); 2, Mr Sonley (Billingham); 3, Mr Greenhall (Tadcaster). **Catfish and loaches:** 1, Mr and Mrs Claxton (Stockton); 2, Mr Punsary (Newcastle); 3, Mr F. Paterson (Stockton). **A.V. coldwater:** 1 and 2, Mrs Hunt (Houghton).

Furnished jar: 1 and 2, Mr Scarth (Cleveland); 3, Mr D. Robinson (Houghton).

Breeders livebearers: 1, Mr A. Troner (Cleveland); 2, Mr Fairclife (Tadcaster); 3, Mr C. Bridges (Houghton). **Breeders egg-layers:** 1, Mr Fairclife (Tadcaster); 2, Mr W. Honeyman (Sunderland); 3, Mr Collins (Stockton). **A.O.V. fish:** 1, Mr R. Atherton (M.S.A.S.); 2, Mr C. Robertson (Newcastle G.C.); 3, Mr Winwood (Peterlee).

OVER the past three months, many aspects of the hobby have been catered for at the meetings of **ILFORD & D. AQUARISTS' & PONDKEEPERS' SOCIETY**. About 20 members visited the tropical fish establishment of Mr Wade in Manor Park, E.12 to view his marine aquaria. Both Mr and Mrs Wade gave a most interesting talk on the subject, and the setting up of marine tanks and the keeping of marine fishes was discussed in detail. This pleasant and informative evening ended with the showing of two films of underwater life. The strong contingent of coldwater enthusiasts in the club were catered for with the showing of a programme of coloured slides and commentary on pool construction and water gardens from Highlands Water Gardens of Rickmanworth. Club members are also gaining further publicity for the

society by taking part in the Arts and Crafts Exhibition at Selfridges, Ilford, which is part of the Arts Festival of the London borough of Redbridge. The club plan to continue to present programmes designed to stimulate interest in a particular aspect of the hobby. The A.G.M. will be held on 12th June, but on 10th July there will be a talk by Mr Skilton from Chelmsford on the breeding of cichlids. In August (14th) there will be a criss-cross quiz on aquatic subjects and in September (11th) a sale of fish, plants and equipment for members.

The first table show of the new season drew a large number of entries and the winning exhibits

THE MARINE STUDY AQUATIC SOCIETY announce that the society has produced its first series of *Judging Standards dealing with tropical and coldwater marine fish exhibits. These are available to members and affiliated societies on application to the general secretary, Mr T. R. Hall, 23 Canfield Gardens, London N.W.6. It is hoped to extend this limited first series of standards to incorporate furnished tropical and coldwater marine aquaria in the near future.*

were: **a.v. egg-layer:** 1, Mr J. Hattam (cherry barb); 2, Mr R. Ruth (blue scara); 3, Mr J. Hattam (rosy barb); 4, Mr J. Hattam (tiger barb). **A.V. livebearer:** 1, Mr J. Hattam (Platy variata); 2, Mr J. Hattam (scarftail guppy); 3, Mr Sheehan (female guppy); 4, Mr Sheehan, Mr T. Robinson (sunset platy and black molly). The April table show was for a.v. platys and characins and all the awards went to Mr John Hattam.

Club meetings are held at St Laurence's Church Hall, Donington Avenue, Barkingside, Ilford and further information can be obtained from the secretary, Mr R. Ruth, 13 Dunkeld Road, Dagenham, Essex.

THE VALLEY A.S. first open show attracted 280 entries from 17 societies, some from as far away as Liverpool, Huddersfield and Blackpool. There was also a very good

At the GOSPORT & D. A.S. open show on 1st July it is hoped to form a SOUTHERN ASSOCIATION OF AQUARIST SOCIETIES, to try to alleviate the shortage of speakers and help to keep southern societies in closer liaison. All south coast societies are invited to send representatives. Details of this and show schedules are available from Mr K. Clough, 16 Newport Road, Gosport, Hants.

response from the public. Judges were Mr C. Walker of Oldham and Mr A. Bloom of Manchester and trophies were presented by Mrs Willett-Whittaker. The trophy for best fish in the show went to Mr K. Parkes of Merseyside. Detailed results were:

Livebearers, Guppies: 1, Mr Brothwood (Leigh); 2, Mrs Bonley (Garran); 3, Mr Wilton (Valley A.S.). **Platy:** 1, Mrs M. Wild (Stretford); 2, Mr F. Ledger (Huddersfield); 3, Mr A. Mathias (Leigh). **Swordtails:** 1 and 2, Mr F. Ledger (Huddersfield); 3, Mr Mathias (Merseyside). **Mollies:** 1 and 2, Mr F. Woodward (Blackpool); 3, Mr Crook (Glossop).

Characins, Small: 1, Mr Winter (Oldham); 2, Mr Bowler (Valley); 3, Mr Booth (T.A.B.). **Large:** 1, Mr Price (Gorton & Openshaw); 2, Mr Parkin (T.A.B.); 3, Mr Parkes (Merseyside).

Barbs, Small: 1, Mr Kershaw (Heywood); 2, Mr Percy (Heywood); 3, Mr Hodgkinson (Gorton & Openshaw). **Large:** 1, Mr Parkes (Merseyside); 2, Mr Parkin (T.A.B.); 3, Mr and Mrs Entwistle (Valley).

Cichlids, Angelfish: 1 and 2, Mr Woodward (Blackpool); 3, Mr Booth (T.A.B.). **Dwarf:** 1, Mr Stray (Halifax); 2, Mr Maltby (Rochdale); 3, Mr Chapman (Valley). **Large:** 1, Mr Holmes (Combsco); 2, Mr Mathias (Leigh); 3, Mr Jones (Valley).

Anabantids: 1, Mr Ingram (Glossop); 2, Mr Ledger (Huddersfield); 3, Mr D. Ledger (Combsco). **Fighters:** 1, Mr Jones (Valley); 2 and 3, Mr Booth (T.A.B.).

Rubras: 1 and 2, Mr A. Gardner (Heywood); 3, Mr Ellis (Valley). **Danios:** 1, Mr Ingram (Glossop); 2, Mr Harrop (Rochdale); 3, Mr Bonley (Garran). **Toothcarps:** 1, Mr Hodgkinson (Gorton & Openshaw); 2, Mr Taylor (Rochdale); 3, Mr and Mrs Charlton (Stockport).

Catfish and loaches: 1, Mr Hodgkinson (Gorton & Openshaw); 2, Mr Price; 3, Mr Parkes (Merseyside). **Catfish:** 1, Mr Parkin (T.A.B.); 2, Mr Booth (T.A.B.); 3, Mr Price (Gorton & Openshaw). **A.O.V. not listed:** 1, Mr Willan (Valley); 2, Mr Kershaw (Heywood); 3, Mr Woodward (Blackpool).

Coldwater, Fancy goldfish: 1, Miss J. Phillipson (East Lancs.); 2, Miss M. Phillipson (East Lancs.); 3, Master F. Phillipson (East Lancs.). **Common goldfish:** 1 and 2, Mrs Davies (Heywood); 3, Mr Butterworth (Valley).

Paris, Egg-layers: 1, Mr Holmes (Combsco); 2, Mr Murray (Belle Vue); 3, Mr Stray (Halifax). **Livebearers:** 1, Mr Hodgkinson (Gorton & Openshaw); 2, Mr Cook (Glossop); 3, Mr and Mrs Wild (Stretford).

Breeders, Egg-layers: 1, Mr Hill (Heywood); Mr Beasley (Garran); 3, Mr Stray (Halifax). **Livebearers:** 1, Mr Hodgkinson (Gorton & Openshaw); 2, Mr Birch (Heywood); 3, Mr Hurnsboth (Barry).

Juniors section. (This was between Valley and Heywood alone.) 1, Master D. Alnworth (Valley); 2, Master T. Harris (Heywood); 3, Master D. Alnworth (Valley).

HOUNSLOW & D. A.S. have recently moved to more spacious headquarters at the Community Centre, Clifton Road, Isleworth. They also held their first dance on 1st April and under the skilled guidance of social secretary Mr Bob Nelhams it turned out to be a function that was a credit to both him and the society.

Another most enjoyable evening was the inter-club show with **RUNNYMEDE A.S.** Although Hounslow won by 925 points to 886, it was felt to be a most creditable

performance by the relatively new Runnymede club whose hospitality to the visitors was acclaimed to be of a very high order. Individual winners were: 1, Mr Bert Pratt (Hounslow, moonlight gourami, 82 pts); joint 2, Mr Eddie Parry (Runnymede, *C. aeneum*, 80 pts) and Mr John Thorne (Hounslow, red swordtail, 80 pts); 3, Mr Phillip Grosvenor (Runnymede, red-tailed black shark, 79 pts).

Regular club table shows are still receiving quite good support and winners at recent meetings have been: livebearers: 1, Mr Alan Fleming (male guppy); 2, Mr Keith Mason (black molly); 3, Mr Alan Fleming (velifers molly). A.v. catfish and loach: 1, Mr Dave Love (*Leiocassis asotomai*); 2, Mr John Thorne (*C. julii*); 3, Mr Eric Sheppard (sucking loach). Barbs: 1, Mr John White (chequer barb); 2, Mr Dave Love (nigger barb); 3, Mr John White (tiger barb). A.v. coldwater fish: 1, Mr Alec Hastings (Bristol shubunkin); 2 and 3, Miss Sylvia Fleming (fantail goldfish and oranda). Cichlids: 1, Mr John Thorne (pike cichlid); 2, Mr Barry Abbott (firemouth); 3, Mr John Thorne (orange chromide). Characins: 1, Mrs Brewer (*Asotomai asotomai*); 2, Mr John Thorne (*A. longipinnis*); 3, Mr Barry Abbott (red-eyed tetra).

A NEW meeting place for LEAMINGTON & D. A.S. at the Fox and Vivian means seats and space for all. The judges were able to walk in freedom in front of the show stand and life is generally conceded to be much more comfortable. The extra space was thought to be very necessary after 'Charlie's' recent visit, Charlie being a 5 ft. alligator who hissed and lashed his tail in a very unfriendly manner during the fascinating talk given by Mr Foden, head keeper of Dudley Zoo Aquarium and Reptile House. Slides and live specimens were used to demonstrate the points made during the talk. Charlie was ultimately unceremoniously poked back into a holdall.

April table show results were: Furnished jars: 1 and 3, Mr T. Dobson; 2, Mr F. Underwood; 4, Mr A. James. Female guppies: 1, 3 and 4, Mr F. Underwood; 2, Mr A. Hemming. A.v. female livebearer: 1, Mr P. N. Thomas; 2, Mr D. G. D. Lucas; 3, Mrs Smith; 4, Mr D. Beard (judges, Mr and Mrs Pearson). Barbs: 1 and 4, Mr T. Dobson; 2, Mrs S. Underwood; 3, Mrs Smith. Characins: 1, Mr F. Underwood; 2 and 4, Mr T. Dobson; 3, Mr D. Lucas. Breeders egg-layers: 1 and 4, Mr F. Underwood; 2, Mrs S. Underwood; 3, Mrs Smith.

Blackpool & Fylde Display



Mr Brian London, who visited the Society's display of tanks, was particularly interested in the piranhas

AT a recent meeting of BLACKPOOL & FYLDE A.S. an air of Sotheby's permeated the proceedings. An auction was being held in order to enlarge the club's fund for buying a 16 mm. projector and cine equipment. Thanks to the fine persuasive powers of auctioneer, Mr Fred Willmin, the club was well on the way to the sum needed by the end of the evening.

At the following meeting, the club was indebted to Mr Bill Matthews, secretary of LYTHAM A.S., for a most interesting talk illustrated by diagrams and drawings on general fishkeeping. When the intended speaker was unavoidably detained, Mr Matthews volunteered to speak at very short notice and undoubtedly saved the night.

Club meetings are held every second and fourth Wednesday of the month at the Veevers Arms and new members, who will be made most welcome, can obtain further details from publicity officer Mr B. Turner, 3 Kent Road, Blackpool (phone 22524).

Club members themselves only had 3 days' notice in which to put on the display of six tanks in the local Rank Bowling Alley in aid of the Lifeboat Fund. Mr J. Cross, show secretary, organised this display. One tank was set up with coral and sunken wreck with seats and Malayan angels to represent the theme of the show. Mr Brian London, visiting the stand, was fascinated by the piranha but decided that presenting the raffle prizes was safer than taking on the piranha without gloves. Mr N.

Hadley and Mr B. Littler also showed the public some good furnished aquaria. Mr J. Taylor, owner of the piranha, summed up the event as another job that Blackpool had got their teeth into.

Tropical marines were the subject of the two April meetings. At the first one, Mr Alan Harper of Poynton, Cheshire showed a film of his fish house where he keeps 14 tanks of tropical marines. These include clown fish, scorpion or lion fish, armed with deadly poison, and surgeon fish from Ceylon that cut their enemies to pieces with a type of flick knife armament. Pride of place went to the Humu-humu-nuku-nuku-a-puaa, a Hawaiian trigger fish, whose name means 'the fish which carries a needle and has a snout or grunts like a pig'. Members voted Mr Harper the beginner's expert, not too technical but very practical. At the second April meeting, Mr Pete Rowe took the club for a film tour under the Mediterranean to the Red Sea. This film had been made by splicing five short films of French origin to make the one masterpiece. Secretary Mr G. Howard explains: 'Arriving in the Red sea area, we were treated to an underwater ballet by the swimmers and fish between the fantastic forest of coral, taken on a turtle's back for a ride, then introduced to the comedian of the film. This was a 500 lb. bass who wouldn't take no for an answer and wanted to be hand fed like the swarm of highly coloured small fish around the diver. After this film, who wants to live on land?'

The AUSTRIAN GUPPY FEDERATION are holding their sixth International Exhibition in Vienna this year on 18th to 25th June in the Natural History Museum (Naturhistorisches Museum, Burggasse 7, Vienna 1). Exhibitors should com-

municate with Mr K. Lield, 1110 Vienna 11, Braunsberggasse 18/2/11, who will be pleased to send out schedules. British exhibitors who also wish to visit the Exhibition will be most welcome and accommodation can be arranged with Austrian members.

RAINWORTH & D. A.S. were hosts in April to **HUCKNALL & BULWELL A.S.** and **MANSFIELD A.S.** in a three-way table show, and were delighted at the forceful turn-out by these two societies, though a little unprepared for the numbers involved. Judge was Mr J. Bower (F.N.A.S., M.D.A.S.) who made the following awards: Characins: 1, E. & R. Stockdale (Mansfield, 75 pts); 2, Mr Allen (Hucknall & Bulwell, 73 pts); 3, Mr Dudley (Rainworth, 68½ pts). Livebearers: 1, Mr Peggs (Rainworth, 79 pts); 2, Mr Wagstaff (Mansfield, 78 pts); 3, Mr Webster (Rainworth, 73 pts). Anabantids: 1, Mr Wanless (Hucknall & Bulwell, 80 pts); 2, Mr Whitaker (Hucknall & Bulwell, 79 pts); 3, Mr Peggs (Rainworth, 78 pts).

THE INTER-SOCIETY competition organised by **AIREBOROUGH A.S.** at the end of April proved to be a most enjoyable social occasion. Whilst judging was in progress a Bingo session was held with a variety of prizes. A raffle was also organised and the prize of an aquarium book was won by Mr Binns of Bradford. This was followed by a delicious supper prepared by the ladies of the club. Competition results were:

Livebearers: 1, Master P. Reynolds (Swillington); 2, Mr Kennedy (Bradford); 3, Mr White (Keighley). Barbs: 1, Mr Stay

(Halifax); 2, Mrs Barry (Swillington); 3, Mr G. Fisher (Aireborough). Characins: 1, Mr Whyte (Halifax); 2, Mr Whiteley (Aireborough); 3, Mr Waudby (York).

A.O.V.: 1 and 2, Master P. Reynolds (Swillington); 3, Mr Whiteley (Aireborough). Staffs and loach: 1, Master P. Reynolds (Swillington); 2, Mr R. Loner (Aireborough); 3, Mr P. Barrit (Bradford). Cichlids: 1, Mr Whyte (Halifax); 2, Mr Stay (Halifax); 3, Mr Dewhurst (Halifax). Anabantids: 1, Mr P. Barrit (Bradford); 2, Mr R. Smith (Keighley); 3, Master P. Reynolds (Swillington). A.O. pairs: 1, Mr White (Keighley); 2, Mr P. Barrit (Bradford); 3, Mr Stay (Halifax). Breeders: 1, Master D. Lacey (Aireborough); 2, Mr White (Keighley); 3, Mr P. Iveson (Aireborough).

The best fish in show award went to Master P. Reynolds (Swillington). The show was judged by Mr G. Holmes. The points gained by each Society were: Swillington 13, Halifax 13, Aireborough 9, Bradford 8, Keighley 8, York 1, Pontefract 0, Leeds 0. A statuette was presented to the winning society and a Longlife Champion medallion to Master Reynolds.

SO GREAT are the attendances at meetings of **WARRINGTON A.S.** that they are becoming restricted by the sheer physical limitations of the present club room. The committee are, however, well aware of the need to resolve this difficulty and negotiations are in hand to obtain more spacious premises. Sixty-four people were present at the April meeting to hear Mr Geoff Collins from Oldham

talk on diseases, and much lively discussion followed after the interval. Also in April the programme of films about fish, insects and wild life presented by the well-known lecturer Mr Norman Mason Smith from Cambridge was thoroughly enjoyed by the audience of 250 drawn from a dozen other societies from all parts of Lancashire and Cheshire. Plans for future meetings include a slide show on tetras on 30th May and a visit from Mr Jim Kelly on 27th June.

At the society's A.G.M. in March officers elected were: president, Mr Alf Higham; chairman, Mr Pete Norris; treasurer, Miss Jean Cameron; secretary, Mr Ron Tench (285 Manchester Road, Warrington, Lancs.); show secretaries: Mr and Mrs George and Dorothy Hall; committee members: Mr Jim Higham; Mr Vic Hill, Mr Kevin Hamblett, Mr Ron Nadin, Mr and Mrs Brian Beswick, Mr Ted Clarke, Mr Gordon Bond, Marian Tench, Mr Howard Bennion, Joan Robinson, Mr Alan Cameron. The annual fish of the month award was made to Mr Alan Cameron, Jean Cameron (2nd) and Mr Malcolm Nadin (3rd). As there was some time in hand, secretary Mr Ron Tench, who "just happened to have with him" some notes on his attempt to breed *kribensis*, brought the meeting to a humorous end with this tale of woe.

In Brief . . .

. . . **TROPICAL FISH** enthusiasts in Maidstone, Kent! The **PISCES CLUB** is looking for new members and you will be assured of a friendly and informative evening at the meetings held once a month at the Len Social Club, Water Lane. Further details from Mr H. A. Gaylard, 10 Trent House, Westmorland Road, Maidstone.

. . . **NEW MEMBERS** at recent meetings and the enthusiastic support of old club members has meant an encouraging start to 1967 for **THURROCK A.C.** The committee's decision to hold a table show at each meeting has also proved a success, and results to date are: Guppy, male: 1 and 2, Mr S. Hendle; 3, Mr D. Durrant; 4, Mr G. Parkin. A.v. molly: 1, Mr D. Durrant; 2, Mr H. Juson; 3, Mr B. Barber. A.v. platy: 1, 2 and 3, Mr D. Durrant. Furnished mini-aquaria: 1, Mr E. Nicol; 2, Mr K. Appleyard. A.v. swordtail: 1, Mr J. Hartlebury; 2, Mr G. Rowe; 3, Mr D. Durrant.

Club secretary, Mr S. Hendle (47 Fulbrook Lane, South Ockendon, Essex) will supply all details of club activities.

. . . A **NEW** committee was elected at the April meeting of **AIREBOROUGH & D. A.S.** as follows: chairman and editor, Mr R. Lister; secretary, Mr H. Myers (14 Hauswell Drive, Yeadon, Nr Leeds, Yorks.); treasurer, Mr P. Iveson; programme and show secretary, Mr G. E. Walker; committee: Mr and Mrs Burnap, Mr S. Fisher, Mr K. Bateman and Mr B. Megson.

. . . **WITHIN** 5 months of its inception **HUCKNALL & BULWELL A.S.** have reached a membership of 40. Fortnightly meetings are held at the Half Moon Hotel, Market Place, Hucknall, Notts., at 8.0 p.m. Officers are: chairman, Mr T. Power; treasurer, Mr K. Wintaker; secretary, Mr T. Harrington (5 Greenwood Vale, Hucknall, Notts.); show secretary, Mr G. Wanless; committee, Mr W. Sherwin, Mr M. Howe, Mr B. Kirk, Mr A. Reid. Prospective new members are very welcome and the secretary will supply all details.

. . . **NORTHERN SHOW LEAGUE** positions to date are: Oram 31, T.A.B. 29, Gorton & Openshaw 25, Merseyside 21, Glossop 18, Heywood 16, Belle Vue 13, Stockport 10, Macclesfield 7, Rochdale Breeders, Salford, Knutsford and International Catfish 0.

. . . **VARIETY** is the key-word for newly formed **BANGOR & D. A.S.** meetings. Club members have seen a demonstration on setting up the aquarium by chairman Mr F. T. Gorton, and a slide show of the Belle Vue Festival on loan from Aireborough A.S. A visit to the Marine Department of Bangor University is planned for June and in July a treasure hunt has been arranged. Meetings are held on the first Wednesday of each month at 8.0 p.m. at the Penguin Café, 260 High Street, Bangor. All tropical fish enthusiasts welcome!

. . . **HALIFAX A.S.** new committee are: chairman, Mr D. Shields; treasurer, Mr R. Wilkinson; secretary, Mr A. G. Whyte (11 Rothwell Drive, Halifax, phone 52062). Will prospective members note that the new meeting place is Clare Hall Secondary Modern School, Room 2,

Prescott Road entrance. Meetings are held fortnightly (next one on 7th June).

... A SPECIAL feature of the **CATFORD A.S.** open show (3rd June) will be two championships, one for a plaque that the F.B.A.S. are presenting for the best breeders team and the other a championship cup for the best egg-laying tooth carp donated by a member of the B.K.A. There is also an interclub challenge shield.

... OFFICERS elected at its recent A.G.M. by **DERWENT A.C.** are: chairman, Mr S. Yeomans; secretary, Mr D. Gates (21 Mount Carmel Street, Derby); treasurer, Mr T. Swinburn; librarian, Mr W. Gwynne; committee, Mrs D. Gates, Mr R. Johnson; auditors, Mr F. Reader, Mr W. Phillips.

... TAPE and slide programmes are being planned by **ROEHAMPTON A.S.** for future meetings, which are held on alternate Wednesdays at the R.E.T.A. Club, Pleasance Road, Putney, London, S.W.15. The future of the club looks brighter with a recent increase in membership and at the April A.G.M. officers elected were: chairman/secretary, Mr J. A. Waller (39 Bramley House, Alton Estate, London, S.W.15); treasurer, Mr F. Furniaux; show secretary, Mr D. Yorke.

... THE NEWLY ELECTED committee of **EAST DULWICH A.S.** are: chairman, Mr G. Gale; treasurer, Mrs D. Dunstan; secretary, Mr A. H. Gale (16 Chesterfield Grove, East Dulwich, London, S.E.22); show secretary, Mr S. Ellis (4 Rows House, Erlanger Road, London, S.E.14); assistant show secretary, Mr D. E. Sutton; committee members, Mr R. Salmon; Mr C. Fellerman.

... THE TABLE show for pairs held by **THORNE A.S.** was won by Mr D. Machin (liberty mollies); 2 and 3, Mrs C. Candow (leeri gouramis, black widows). The quiz held at this meeting was won by Mr D. Wells' team, 41 points to 40.

... FILTRATION was the subject chosen by club member Mr W. Emmett at the April meeting of **HALTON & D. A.S.** Mr Emmett had made careful research into the subject and gave a comprehensive talk that roused a controversial and lively discussion afterwards and a big vote of thanks from his fellow members. Table show results were: livebearers (excluding guppies): 1 and 2, Mr F. Senior; 3, Mr B. Dawson; Guppies (male): 1, Master D. Sharp; 2, Mrs O. Taylor; 3, Mr J. Linley.

... CURRENT placings in the various competitions that **DUNDEE A.S.** held for trophies are: Scott trophy: Mr S. D. Gauld, 32; Mr G. Reid, 20; Mr B. Hill, 14; Mr W. S. Carstairs, 13; Mr J. McGeoghie, 11; Mr D. Perrie, 10. Member of the year: Mr S. D. Gauld, 270; Mr G. Kirkcaldy, 190; Mr D. Perrie, 180; Mr G. Reid, 155. Junior trophy: Mr S. D. Gauld, 61; Mr D. Perrie, 26; Mr D. Kirkcaldy, 25; Mr B. Montgomery, 10. Balgay trophy: 1, 2 and 3, Mr A. L. Hastie; 4, Mr W. S. Russell. Balgillo trophy: 1, Mr W. S. Russell; 2, Mr F. McNaughton; 3, Mr W. S. Russell.

... 73 fish on the bench was the excellent total at the April table show of the **LIVERPOOL SECTION** of the **FANCY GUPPY ASSOCIATION**. Mr Brian Grice, assistant show secretary, won the gold medal for the highest-pointed fish in show for the second time. Mr Ken Clark had a field day winning a silver star award, several firsts, and his silver guppy. The section hope for great things from these members at the International Guppy Show to come. The meeting took the form of a forum, which enabled a good deal of information to be passed on in answer to the questions, and was especially helpful to beginners.

... **NOTTINGHAM & D. A.S.** officers for the next year, elected at the A.G.M. in March, are: president, Mr C. Hill; vice-president, Mr H. R. R. Odam; chairman, Mr N. H. Goodliffe; vice-chairman, Mr A. Saxton; secretary, Mr K. Green (253 St Anns Well Road, Nottingham); treasurer, Mr K. B. Binns; show secretary, Mr W. J. Christian (40 Moor Lane, Bunny, Notts.); breeders' section leader, Mr G. Bulleyment; bulletin editor, Mrs B. M. Goodliffe (65 Seymour Road, West Bridgford, Nottingham); general committee: Mrs Bulleyment, Mr B. Inman, Mr C. Jones, Mr T. Gaskell, Mr K. Roberts, Mr F. Saunders and Mr G. Wood.

Founder members of the Society, Mr and Mrs H. P. Lynn and Mr Walker, and also Mr W. Webbley were unanimously elected life members. Club meetings are held at 7.30 p.m. on the last Tuesday of each month in the first floor room, Peacock Hotel, 11 Mansfield Road, Nottingham and visitors are welcome to all meetings.

... **BRACKNELL & D. A.S.** will meet this year without a summer break, on the first and third Thursday of each month. Officers for the year are: chairman, Mr Ken Phillips; secretary, Mr N. Jordan; assistant

secretary, Mrs G. Carter; treasurer, Mr Dick Dove; vice-chairman, Mr Moeris Carter; librarian, Miss Cheryl Jordan; show secretary, Mr Brian Johnson; press officer, Mr Richard Armstrong (4 Orwell Close, Cove, Nr Farnborough, Hants); committee member, Mr Les Jordan. Mr Les Jordan was voted Aquarist of the Year and will receive his award at the annual show on 23rd September.

... TWENTY entries in the home furnished tank competition of the **FRELANCE A.S.** meant two evenings' work for judge Mr A. E. Jessopp, chairman of the F.B.A.S., and the club members would again like to express their sincere thanks to him. Results were: 1, Mr Roy Wilkins (87 pts); 2, Mr Ray Thomas (83 pts); 3, Mr Albert Howes (79 pts); 4, Mr M. Hall (76 pts). The journal of the society, issued bi-monthly at a cost of 7s 6d p.a. including postage, may be obtained from editor Mr R. A. Thomas, 54 Beccroft Road, Crofton Park, London, S.E.4.

... ENTRIES in **COVENTRY POOL & AQUARIUM SOCIETY'S** venture for the novices' class were so rewarding that the class will be repeated later in the season. Results were: egg-layers (16 entries): 1, Mrs Brocklebank (*P. ardensis*, 75 pts); 2, Mr Regan (sucking loach, 71 pts); 3, Mr and Mrs Thomas (fighter, 70 pts). Livebearers (6 entries): 1 and 2, Master P. Regan (red wagtail platy, 72 pts, yellow wagtail platy, 70 pts); 3, Master P. Yielding (double sword platy, 69 pts). Breeders class: Master P. Regan (yellow wagtail platy, 70 pts).

... SECOND-ROUND results in the **CRAWLEY COLLEGE A.S.** club championship (judge Mr D. Ellis, F.B.A.S.) are: 1, Mr R. Partridge (*Trichopsis pumilus*, 77 pts); 2, Mrs J. H. Partridge (*B. titteya*); 3, Mr T. Goggin (*C. paleatus*).

... A SUCCESSFUL first year was reported at the A.G.M. of the **LONDON GROUP** of the **BRITISH KILLIFISH ASSOCIATION** by chairman Mr Mick Packwood. Average attendance at monthly meetings held on the fourth Monday of every month at 8.15 p.m. was 17. Visitors were present at most meetings and of these several had subsequently joined the group. Officers elected for the coming year were: chairman, Mr Dick Packwood; treasurer, Miss Kay Bulbrook; secretary, Mr John Open (19 Dukas

Court, 214 Peckham Rye, London, S.E. 22; show secretary, Mr Ken Owen; assistant show secretary, Mr Norman Swelling. Dates and venues of meetings are: 24th July, 25th September, 27th November; St. Peters Church Hall, Clapham Manor Street, Clapham, S.W.4. 26th June, 31st August, 23rd October, 18th December, Kidbrook House, Shooters Hill Road, S.E.7.

... SOUTHEND, LEIGH & D.

Dates for Your Diary

27th May. **READING & D. A.S.** are staging the 1967 **THREE COUNTIES AQUARIST SHOW** at The S.G.R. Social Club, Gas Lane, Reading. Booking from noon, Friday 26th May. Show schedules from Mr C. Masters, 16 Morcombe Avenue, Caversham, Reading, Berks.

2nd June. **FEDERATION OF BRITISH AQUATIC SOCIETIES** Assembly.

2nd June. **CATFORD A.S.** Open Show. Full details from show secretary Mr Ken Owen, 42 Elmer Road, Catford, London, S.E.6.

2nd June. **PONTEFRAC T & D. S.A.** Open Show (provisional).

2th June. **SECOND INTERNATIONAL GUPPY SHOW** organised by the **FANCY GUPPY ASSOCIATION**, Ardwick Baracks, Ardwick Green, Manchester, 10.0 a.m. to 5.0 p.m. Show organisers: Mr R. Bredford, 95 Valley Road, Aston Park, Bredbury, Cheshire.

2th June. **LLANTWIT MAJOR A.S.** annual Open Show.

2th June. **LYTHAM A.S.** first Open Show at the Lowther Pavilion, Lytham.

2th June. **THORNE A.S.** annual Open Show. Thorne Grammar School. Enquiries to Mr D. Wells, 17 Mansion Court Gardens, Thorne, Nr Doncaster.

2th June. **UXBRIDGE & D. A.S.** Open Show. Meadow School, Royal Lane, Hillingdon, Uxbridge. Full details from Mr P. Ginger, 2 Clowley Avenue, Eckenham, Uxbridge, Middlesex.

2th June. **STONE A.S.** third Open Table Show. Walton Community Centre, Stone, Staffs. Schedules from Mr K. J. Harvey, 62 St. Vincent Rd., Walton, Stone.

2th June. **SWILLINGTON A.S.** second Annual Show, Swillington Primary School. Further details from Mr P. Seales, 24 Preston View, Swillington, Woodlesford, Nr. Leeds.

2th June. **GLOSSOP A.S.** Open Show. Details from the secretary, Mr J. Ingram, 27 Charlestown Road, Glossop, Derbys.

22nd-24th June. **BRISTOL T.F.C.** Open Show. Schedules from show secretary, Mr F. Barry, 15 Foscoate Road, Ashton, Bristol 2 (phone 666336).

A.S. table show results to date are: Mr D. Cheswright (6 pts); Mr Finch (4); Mr S. Norris (3); Mr C. Ward (3); Mr R. Orford (2); Mr T. King (1); Mr E. Thompson (1). The successful member with the highest score for the year wins the Southchurch Cup. The Saunders Cup was awarded this time to the winner of the hard-luck table show for members who had not gained a first prize card in 1966. Mr Finch won this with a nigger barb.

24th June. **SOUTHAMPTON & D. A.S.** Open Show. Langley Hall, Commercial Road, Southampton (opp. Gasmont Theatre). Details from show secretary Mr D. V. Jones, Firs Farm, Carbridge, Soton.

24th June. **DIDCOT & D. A.S.** Open Show. Didcot Labour Club. Schedules and entry forms from Mr P. Tuckey, 2 Morrell Close, Didcot, Berks.

24th July. **HUTTON GRAMMAR SCHOOL, A.S.** second annual Open Show, Preston, Lancs. Details from show secretary, Mr D. J. Radcliffe, Kinda, Todd Lane South, Lostock Hall, Preston, Lancs.

24th July. **GOSPORT & D. A.S.** Open Show. Schedules from Mr K. Clough, 18 Newport Road, Gosport, Hants.

24th July. **LEAMINGTON & D. A.S.** second Open Show. Warwick Youth Centre, Coten End, Warwick. Details from Mrs S. Underwood, 22 Westlea Road, Leamington Spa.

24th July. **MERSEYSIDE A.S.** Open Show. Mosey Athletic & Social Club, 5 Richmond Terrace, Liverpool 6.

24th July. **LEAMINGTON & D. A.S.** second Open Show.

2th July. **GOLDFISH SOCIETY OF GREAT BRITAIN** quarterly meeting. Conroy Hall, Red Lion Square, Holborn, London at 2.30 p.m.

2th July. **BASENGSTOKE & D. A.S.** Open Show. St Johns Ambulance Hall, Victoria Street, Basingstoke. Schedules from Mr A. Marshall, 61 Pitman Close, Basingstoke, Hants.

2th July. **CHELtenham & D. A.S.** first Open Jar Show since re-formation of old society, Christ Church Hall, Malsvern Road, Cheltenham. Details from Mr R. Deadman, 42 Nowerton Lane, Fretbury, Cheltenham.

2th-2th July. **ROMFORD & BEACON-THREE A.S.** Dagenham Town Show. Central Park, Dagenham, adjoining Civic Centre. All enquiries to Mr J. M. R. Fyfe, 2 Ashvale Drive, Cratham (phone Upminster 8435).

3-2th August. **PORTSMOUTH A.S.** fifteenth annual Open Show. Banching, 2th; judging, 6th; open to public 7-2th; prize-giving, evening of 2th.

2th August. **GORTON & OPENSLAW** third annual Open Show, Conservative Club, Gorton Lane, Manchester 18.

22nd-26th August. **MIDLAND OPEN SHOW** (the 24th). Bingley Hall, Broad Street, Birmingham. Details from Mr J. Wain, 122 Franklin Road, King's Norton, Birmingham 26.

2th and 2th August. **OSRAM A.S.** Two-Day Show.

... Mr F. BROWN gave a very interesting talk to **BRISTOL TROPICAL FISH CLUB** members at the April meeting on general fishkeeping. Results of the open table show for puppies were: Male (open): 1 and 2, Mr F. Brown; 3, Mr Bubb; (novice): 1 and 2, Mr Bubb; 3, Miss A. Morgan. Female (open): 1 and 2, Mr F. Brown; 3, Mr Hemmings; (novice): 1, Mr Hemmings; 2, Mr Kilminster; 3, Mrs King.

22nd September. **HIGH WYCOMBE A.S.** annual Open Show. The Ry, High Wycombe, Bucks. This will include a guppy show put on by the **THREE COUNTIES** section of the **FEDERATION OF GUPPY BREEDERS SOCIETY**. Details from Mr C. E. Pike, 18 Ashley Drive, Tylers Green, Penn, Bucks.

22nd September. **FEDERATION OF BRITISH AQUATIC SOCIETIES** Assembly.

22nd September. **YATE & D. A.S.** first Open Trade Show. Schedules from show secretary Mr J. B. Powell, 114 Cranleigh Court Road, Yate, Glos.

22nd September. **REIGATE & REDHILL A.S.** first Open Show. Details from show secretary Mr G. Bass, 2 Caroline House, Rees Road, Redhill, Surrey.

2th and 2th September. **NOTTINGHAM & D. A.S.** Open Show. Further details awaited.

2th September. **HUDDERSFIELD TROPICAL FISH SOCIETY** Fifth Open Show.

2th September. **BRADFORD & D. A.S.** Open Show. Venue to be announced.

23rd September. **BRACKNELL & D. A.S.** Open Show. Victoria Hall, Bracknell, Berks. Details and show schedules from Mr B. Johnson, 18 Highfield Close, Cove, Farnborough, Hants.

24th September. **BLACKPOOL & FYLDE A.S.** annual Open Show. Harrowside Solarium, South Promenade, Blackpool.

24th September. **KINGSTON & D. A.S.** Open Show. St. Luke's Social Centre, Elm Road, Kingston-on-Thames. Details from Mr H. Towell, 11 Belmont Terrace, Chiswick, W.4. Phone CH1 7335.

2st October. **HEYWOOD & D. A.S.** Open Show. Labour Club, Bridge Street (opposite the Seven Stars), Heywood, Lancs. Extra class for marines.

2th October. **MID-HERTS A.S.** Open Show. St. Pauls Church Hall, St. Albans, Herts. Further information from Mr D. R. Lelliott, 19 Prospect Road, St. Albans.

2th October. **STONE A.S.** Open Show (provisional).

2th-2th October. **BRITISH AQUARISTS FESTIVAL** organised by the Federation of Northern Aquarium Societies, Belle Vue Zoological Gardens, Manchester.

2th November. **GOLDFISH SOCIETY OF GREAT BRITAIN** quarterly assembly.

2nd December. **FEDERATION OF BRITISH AQUATIC SOCIETIES** Assembly.

3rd December. **LEEDS & D. A.S.** Open Day Show.

Classified ADVERTISEMENTS

AQUATIC SUPPLIERS

OLDBURY'S OF CHESTER. 100 varieties tropical fish, freshwater and marine. 40 varieties plants. Equipment. Live foods. Evenings after 7 p.m. Weekends 2 to 6 p.m. 36 Pearl Lane, Vicars Cross, Chester 41671.

PLYMOUTH TROPICALS for your fish, plants and equipment. North Hill Nurseries, Tavistock Road, Plymouth. Phone 62663.

TROPICAL FISH, QUALITY PLANTS AND EQUIPMENT are now available at: Beta Pets (Bill Matthews & Don Thomson), 285 Ribbleson Lane, Preston (S8709) Lancs.

TROPICAL AND COLDWATER FISH AND REPTILES, plants, equipment. Everything for the aquarist and pondkeeper. Mail order service. Why not pay us a visit? W. H. Smith Aquatics, 67 Reddish Lane, Gorton, Manchester 18.

CHELTEMHAM AQUATICS. Largest selection of tropical and coldwater fish in Gloucestershire. Bow-fronted and stainless-steel aquaria, equipment, reptiles and amphibia and everything for the water garden. 11 Suffolk Parade, Phone Cheltenham 24949.

HIGH QUALITY TROPICAL FISH AND PLANTS, tanks and accessories. Ronada Ltd., Queen's Park Aquarium, 153 Queen's Road, Blackburn. Phone 57654. Professional aquarists. Personalised service.

KINGPETS keep fish in BATH, tropical and coldwater. Full range of equipment and books; bow fronts. Plants for pools and aquaria. Plastic and fibreglass pools, streams, fountains. Reptiles and other animals. 23 Brock Street, Bath. Phone 4028.

REPTILES, AMPHIBIANS. Free list. J. D. Naturalists, 36 Naxby Avenue, Crosby, Liverpool 23.

FISH

SUPERB VEILTAIL GUPPIES Awarded 'Water Life' diploma. Best in open show. £1 per pair, carriage 5s. C. R. Perry, Professional Aquarist, 615 West Street, Crewe.

CLASSIFIED ADVERTISEMENTS

Rates: 6d. per word (minimum charge 6s.); Number 2s. extra if required. Remittance with order to be sent to **PetFish Monthly** 554 Garratt Lane, S.W.17

GUPPIES interest you? Then you should read **ALL ABOUT GUPPIES** by L. F. Whitney & Paul Hahnel: 12s 7d post free from PetFish Publications, 554 Garratt Lane, London, S.W.17.

MARINES WANTED. Small regular supplies of young native marine fishes and invertebrates are required by members of the Marine Study Aquatic Society of Great Britain. Please write to Box 232 stating types and sizes available.

QUARANTINED TROPICALS. Neons 2s., breeding pairs angels, 30s. Plants 5s. doz. S.A.E. list. Barber 71 The Meadows, Ingrave, Brentwood, Essex, Heringgate 774.

BOOKS

YOUR COPY of **PETFISH MONTHLY** will not be missed if you ask us to send it to you by post each month. Send 17s 6d (for 6 issues) or £1 15s (for 12 issues) to PetFish Publications, 554 Garratt Lane, London, S.W.17 and please state the month of the issue with which you wish the subscription to start.

GOLDFISH. How to breed and rear goldfish is simply and fully explained in the Foyles Handbook of that name. Price 5s post 7d from PetFish Publications, 554 Garratt Lane, London S.W.17.

MISCELLANEOUS

MAN REQUIRED to control Aquatic Department of Harrow's leading pet store. Experience of tropical fish desirable. A permanent position with excellent prospects. Salary according to age and experience. Apply: Peters Food Stores Ltd., 464-8 Alexandra Avenue, Harrow. Phone 01-866 3622.

COLOURED SLIDES of tropical freshwater and marine fishes with commentary for hire. Box 231.

UP TO £10 paid for 1918 to 1934 5s pieces. Other coins and medals purchased. Searle, 3 Raleigh Street, Plymouth.

EQUIPMENT

LARGE AQUARIA FRAMES, SHADES, STANDS. 1 x 1 x 1 in. steel angle: 30 x 15 x 12 in., 26s; 30 x 15 x 15 in., 27s; 36 x 15 x 12 in., 28s. 1 1/2 x 1 1/2 in. steel angle: 42 x 15 x 12 in., 38s; 42 x 15 x 15 in., 40s; 48 x 15 x 12 in., 44s; 48 x 15 x 15 in., 47s. Aluminium shades: 24 x 12 in., 20s; 30 x 12 in., 24s; 36 x 12 in., 30s; 48 x 12 in., 40s; 48 x 15 in., 46s. Stands: 24 x 12 x 36 in. high, 40s; 30 x 12 x 36 in., 45s; 36 x 12 x 36 in., 50s; 48 x 12 x 36 in., 65s; 48 x 15 x 36 in., 70s. Any size to order, S.A.E. Carriage paid. Money back if not satisfied. Glazing compound (1s 4d lb.) sent only with frames. C.W.O. Hockney Engineers, Derwent Place, Bath Road, Leeds 11. Phone 25061.

SHOW JARS. New glass show jars, with black screw tops, 4 in. square, 6 in. deep. 3s each, 33s dozen, for collection only (South London area). Box 53.

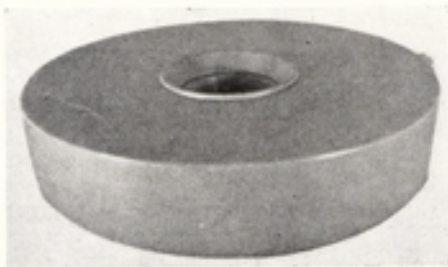
WATER PLANTS

TROPICAL AQUARIUM PLANT SELECTIONS, books, fish foods and equipment. All available by post from K.M.K. Aquatics, Stockton, Rugby. S.a.e. for lists.

GREENHOUSE GROWN—Special Spring & Summer Offer. 8 Water lettuce, 8 *Ceratopteris cornuta*, 1 Riccia, 1 Salvinia, 1 Azolla, 16s p.p. Bachelors Farm, Ockham, Surrey.

TROPICAL AQUARIUM PLANTS, home grown. Amazon sword, 4s., large chain sword, 1s. 9d., vallis, 4s. 6d. dozen, *Ambulia*, 5s. 6d. dozen, post 1s. 41 Wissage Lane, Lichfield, Staffs.

Let Your Fish Go to Work on the Shrimp—not the Shells!



with HYKRO'S new Brine Shrimp Hatcher

Designed to give maximum hatching of brine shrimps and perfect separation of live shrimps from the egg-shells. Complete with one loading of shrimp eggs (500,000) and special salt mix

Only 9s.—From all stockists of HYKRO Products

Other New Accessories from Denmark

Hykro Water pH Indicator Reveals exact degree of acidity or alkalinity instantaneously—over 100 tests per roll, 5s. 6d.

Hykro Variety Food The Perfect Food for all fish. One trial will convince you—3s. per large drum. Hykro Flakes: Breeder's Pack (1 kilo, over 2 lbs.), 32s. 6d. Hykro Vacation Food, only 1s.

Hykro Ganged Valves Hykro Clamps, Tees and 4-Ways. Also 2-way, 3-way and 4-way ganged valves. All are reasonably priced, as strong as metal and cannot rust.

Ask for the large packs of Hykro Shrimp Eggs (*Artemia salina*) and Hykro Prepared Salt Mixture.

HYKRO lines are obtainable at all good Aquarists and Pet Shops.

JOE GRASSBY Sole Importer

THE GLEN FISHERIES MOBBERLEY CHESHIRE

NORWOOD

A Q U A R I U M

ANOTHER FIRST FROM
NORWOOD AQUARIUM!

24" × 12" × 12"
STAINLESS STEEL
AQUARIA

59/6 Glazed with special
glazing compound ideal
for marines

AND OTHER SIZES:

48" × 12" × 15" £9 . 10 . 0
36 $\frac{1}{2}$ " × 12" × 15" £6 . 10 . 0
30" × 12" × 15" £4 . 8 . 6

(Aquariums for Collection only)



* * * * *

WE STOCK A LARGE SELECTION OF
TROPICAL FISH & PLANTS PLUS COLD-
WATER FISH & MARINES AS AVAILABLE

* * * * *

OUR OFFER of a 24" × 12" × 12" aquarium, 1" angle
fully glazed, plus heater, thermostat and thermometer at
59/6d. complete is the best value for money on the market
today.

SPECIAL for bona fide wholesale customers, we can now
offer 40-70 varieties of good quality tropical fish.

60, KNIGHTS HILL, WEST NORWOOD, S.E.27

Phone 01-670 6908

ONLY Genuine **METAFRAME**

Stainless Steel tanks are available in sizes from 2 gals. to 105 gals. and with all these hoods:



STOW-A-LIGHT

Very smart plastic and stainless. Hidden compartment for accessories.

FULL HOOD

All-over cover in stainless steel



HALF COVER

For use with glass, for breeders, etc.



Metaframe tanks are made from top quality stainless steel. It won't rust—and now double sealed to prevent leakage. Metaframe prices are little more than angle iron. For instance the 24" x 12" x 12" size costs £4.7.6d. including purchase tax. Therefore your long-term investment in a superior job, is very small.

METAFRAME AQUARIUMS—Manufactured in England in our own factory. Please ask your dealer for details or write to us.

INTER-PET—CHURCH ST., DORKING, SURREY Tel: Dorking 2566

"I saw your advertisement in PFM"

Singapore Aquatic Nurseries

P.O. BOX MACPHERSON 9
MACPHERSON ROAD POST OFFICE
SINGAPORE 13

Leading Exporters of

EXOTIC TROPICAL FISH
MARINE CORAL FISH
ALL TYPES OF
AQUATIC PLANTS

Direct Shipments

from South East Asia

Angel Aquaria

open till 9 o'clock every night and
all day Sunday. Saturday 6.30.

Tropical Fish Plants and Equipment.

47 West Road, South Ockendon, Essex

BOROUGH TROPICALS

12 TRINITY STREET · SE1
Tel: HOP 3996

*Large variety of Tropical
Fish · and accessories*

COMPLETE AQUARIA SUPPLIED
AND MAINTAINED BY AGREEMENT

GROWLUX fluorescent CONTROL KITS

Comprising: Choke,
Starter and Holder,
2 tube ends, and 2
tube clips.

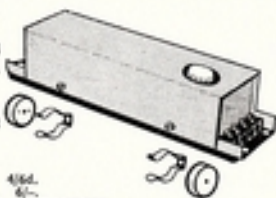
KIT A for 15 or 20 watt
tube 19/6d.

KIT B for 40 watt
tube 19/6d.

Postage: 1 or 2 kits 4/6d.
3 or 4 kits 6/-
6 kits 7/6d. 12 kits free.

Do not kits with choke and starter enclosed in pressed steel box and
wired up ready, 12/6d. extra.

ELECTRONICS (CROYDON) LTD.
(Dept. PF), 182/3 Tamworth Road, Croydon (Opposite West
Croydon Station)



WHOLESALE RETAIL

BONNER AQUARIA
19 BONNER STREET
BETHNAL GREEN
LONDON E.C.2
Tel. 01-980-1488

TROPICAL PLANTS
FISH
COLDWATER ACCESSORIES

Importers of Tropical Fish and Plants.
Trade Supplied. Phone or call any time.
Thursdays by appointment only.
Mon.-Fri. (except Thur.) 9 a.m.-8 p.m.
Thurs. 9 a.m.-1 p.m. Sat. 9 a.m.-6.30 p.m.

MARINES

WE STOCK ONLY MARINES
OVER 20 TANKS ON DISPLAY

Marine Fish Supplies

25 Windmill Hill, Enfield. Phone 0285

Weekdays 9/10 6 p.m. All day Saturday
and Sunday.

WHOLESALE ENQUIRIES WELCOME

Please mention PFM when writing to advertisers

NORROY AQUARISTS SHOW CABINETS

The carcass is strongly constructed from selected hardwoods and Mahogany faced ply, fitted with vertical slide lid and attache case handle. The cabinet is finished in a waterproof lacquer, and is supplied complete with expanded polystyrene insulation, and one partition for use with the two 4½ sq. containers provided.

Dimensions—S.T.1.

11½' long x 3½' high x 6' wide.

Price 45/-

inclusive of the 2 4½' sq. containers and P.P.
Terms C.W.O.

N.B.—If ordered through your society in minimum orders of 6 cabinets, a discount will be allowed.

**NORROY PRODUCTS, MAIN ST.,
BLIDWORTH, MANSFIELD,
NOTTS. Tel. 2833**

UNDER NEW MANAGEMENT

Wimbledon Aquaria has re-opened under entirely new management, for the sale of Tropical and Coldwater Fish and Plants, together with Pet Foods and Aquaria Equipment, including made-to-measure tanks.

**Wimbledon Aquaria Ltd.,
6, Stanley Road,
Wimbledon, S.W.19.**

PetFish U.K. Currency Guide

Approximate dollar equivalents to the prices given in advertisements, for the guidance of overseas readers

£1 (one pound)	.....	\$2.80
1s (one shilling)	.....	\$0.14
6d (sixpence)	.....	\$0.07
1d (one penny)	.....	about \$0.01

Examples

1s 6d (or 1/6)	.....	\$0.21
5s 0d (or 5/-)	.....	\$0.70
7s 6d (or 7/6)	.....	\$1.05
£1 17s 9d (or £1/17/9)	.....	\$5.27

Visit Bean Hatchery

(Mrs K. Cooper)

at Bean, Nr. Dartford, Kent

(Just off A2 Trunk Road, near Black Horse)

Phone: Longfield (Kent) 4189

Large selection of

**TROPICALS
PLANTS
ACCESSORIES**



Call any time, including Sunday

★ AQUARIST SOCIETIES ★

give us a ring and book a visit some evening,
or Sunday

Phone CUDWORTH Yorks, 497

Good FISH and EQUIPMENT at reasonable prices

**PET STORES
206, BARNSELY ROAD
CUDWORTH, near BARNSELY**

We are 4 miles from Barnsley on the Pontefract Rd.

WALK-AROUND

PET STORES LTD.

5 TEMPLE END, HIGH WYCOMBE, BUCKS.

TEL: HIGH WYCOMBE 21357

**A wide variety of Tropical and
Coldwater Fish, Plants & Accessories**

Further extensions to our range of
Tropical, Coldwater & Pond stock in progress

AQUA-IMPORTS ILFORD

IMPORTERS OF TROPICAL,
MARINE AND FRESHWATER
FISHES,
PLANTS, CORALS AND SHELLS

*AQUA-IMPORTS welcomes all trade
enquiries for fish and plants. Large
selection of fish always in stock*

85 WANSTEAD PARK ROAD
ILFORD

VALENTINE 4633

WHOLESALE ONLY



McLYNN'S FISH-FOOD

THE FOOD IN THE PLASTIC BOX
CONTAINS EVERY ESSENTIAL INGREDIENT
WILL NOT FOUL THE WATER
1/6, 2/6, 5/-, 6/6 & 17/6

From your Pet Shop or direct from McLYNN'S

McLYNN'S AQUARIUM

VISITORS BY APPOINTMENT

11 a.m.-5 p.m. CLOSED ALL DAY WEDNESDAY

NOW A BEST SELLER!

ALL ABOUT TROPICAL FISH

3rd edition, enlarged and brought up to date
512 pages, 120 colour plates, 230 monochrome
photos, line drawings

by D. McInerney of McLynn's Aquarium 85/-
postage 4/6

McLYNN'S AQUARIUM

EWHURST, Nr. CRANLEIGH, SURREY

Telephone: EWHURST 446

NORTH LONDON'S LARGEST COLLECTION OF TROPICAL FISH

70 TANKS, INCLUDING 10 MARINES
ALWAYS OVER 100 VARIETIES ON DISPLAY
WE ARE THE COMPLETE AQUARIST

T & T TROPICALS

128 CLARENCE RD., CLAPTON E.5
(RING 985-0790)

Club visits welcome by appointment
Open until 8 p.m. weekdays, and 1 p.m. Sunday

BEKAY TROPICALS LTD.

TROPICAL & COLDWATER FISH
AQUATIC PLANTS
PONDS & POND PLANTS
PETS & PET SUPPLIES
HOUSE PLANTS

GROVE ROAD NURSERIES
HITCHIN HERTS

(CLUB VISITS WELCOME BY APPOINTMENT)

THE POSTMAN can bring you our CATALOGUE

OUR PROMPT POSTAL SERVICE CAN BRING YOU all you need for SUCCESSFUL FISHKEEPING

Please state whether your interest lies in Aquariums and/or Garden Ponds

Your Guarantee of Satisfaction
—since 1948

Telephone
2406

WINGATE 7, MARKET STREET
WINCHESTER

ACUREL Q

Cures white spot, fungus and algae



Bioquatic Laboratories
Dept. T.20.,
278 Penistone Rd.,
Sheffield 6

Please mention PFM when writing to advertisers

MARINES **26 STAINLESS STEEL & NYLON-COATED TANKS**
 Wholesale and retail
 Rail service available

TROPICALS

Over 100 varieties in stock

Mon. 9-6 Thurs. 9-2
 Tues. 9-6 Fri. 9-8
 Wed. 9-6 Sat. 9-7

FREDS AQUARIUM
 94 BURDETT ROAD
 BOW, E.3 980 5714



EVERYBODY IS TALKING ABOUT-Vitakraft Antimaladin

2in1 Aquarium Remedy

Antimaladin the new universal aquarium remedy combats most diseases including lck, fin and tail rot and all fungi; it also eliminates contagious diseases and provides essential minerals. It will do your plants as much good as your fish. Highly concentrated—one bottle will treat 100 gallons of water.



EMOLIN 65 A remedy-preventative, especially for Ichthyophthirius, and eliminates algae.

FLORASIN The new aquarium tablet plant food and fertilizer. Creates magnificent growth of even the most delicate plants.

CHLOR-NEUTRAL The safe aquarium aid for rapid removal of chlorine; also stimulates plant growth.

MULTI-VT-MIN The all in one vitamin complex. Contains all essential vitamins for fish and plants.

ERIC WOODS (ROSEWOOD) LTD.
 ARLESTON, WELLINGTON, SHROPS. Tel: Wellington 2254

WHOLESALE DISTRIBUTORS REQUIRED

ANGLIAN AQUATICS

offer

125 varieties of Tropical and Coldwater Fish and Plants

also

5'-6" Boa constrictors ..	£12 10 0
Rainbow Boas from ..	£5 0 0
Caimans 18"-22" long ..	£2 10 0
36" Tegu lizards (Tame) ..	£8 0 0
Giant Marine Toads ..	£2 10 0

Open 7 days a week

339 WIMPOLE ROAD
 BARTON
 CAMBRIDGE

Phone COMBERTON 352

Please mention PFM when writing to advertisers

TACHBROOK

244 VAUXHALL BRIDGE ROAD,
LONDON, S.W.1. Telephone: VICTORIA 5179

TROPICALS

ANGLE IRON TANKS	STAINLESS STEEL METAFRAME	3-D BACKGROUNDS	FILTERS	WHITELWORM CULTURE
18x10x10 in. £1 15 0	16x8x10 in. £2 5 0	For 18x12 and 18 in. tanks ... 14 7	Windmill Premier ... 12 6	Small 3 0 Large 5 0
18x12x10 in. £1 17 6	20x10x12 in. £3 10 4	For 24x12 ... 19 0	Biological Filters (S) 18x10 in. ... 15 0 (L) 24x12 in. ... 19 6	NETS
18x12x12 in. £2 0 0	24x12x12 in. £4 7 4	For 36x12 and 36 in. tanks ... 30 8	Windmill Consort ... 19 6	Round Nylon nets: 3 in. 1 2 4 in. 1
24x12x12 in. £2 12 6	24x12x16 in. £7 10 11		Internal Corner ... 4 6	Green cotton nets: 3x2 1 3 5x6 2 0 3x4 1 6 6x7 2 4 4x5 1 9 7x9 3 9
24x15x12 in. £2 17 6	30x12x12 in. £7 10 11		Hykro Jr. Bottom ... 5 0	Breeders short wooden handles: 6x9 4 6
30x12x12 in. £3 10 0			Hykro De Luxe ... 13 6	Comet Nylon nets: 3x4 2 0 5x6 3 0 4x5 2 4 4x6 3 9
30x15x12 in. £3 15 0			Dynaflo ... £5 17 6	Brine Shrimp or Daphnia nets 3x2 1 3 4x5 1 9 3x4 1 6 5x6 2 0
36x12x12 in. £4 5 0			Super Dynaflo ... £6 12 6	Wooden handles 6x9 4 3
36x15x12 in. £4 15 0			Slim Jim External ... 14 6	
36x15x15 in. £5 15 0			Klear King External ... 22 6	
48x12x12 in. £6 2 6			Gro-Wel Bubble up ... 35 0	
48x15x12 in. £6 15 0				
48x15x15 in. £8 15 0				
HEATERS				
Es Es Standard—25, 50, 75, 100w. ... 7 6				
Es Es Superb—25, 50, 75, 100, 125, 150w. ... 10 6				
Uno Regal—25, 40, 60, 75, 100, 120, 150, 200w. ... 9 6				
Es Es Flexible—100w. only ... 19 6				
Elephant—25, 40, 50, 60, 75, 100, 120, 150w. ... 10 6				
Rena—35, 50, 75, 100, 150, 200w. ... 10 9				
Wizard ... 8 6				
COMBINED HEATER & THERMOSTAT				
Es Es Dial-O-Matic—100, 150w. ... £2 1 6				
Es Es Presso-Matic 50, 100, 150w. ... £1 4 10				
Inzer Pet Submersible 100, 125, 150w. ... £1 15 4				
THERMOSTATS				
Uno Popular ... 10 0				
Uno Pop/Neon ... 12 6				
Uno Inside Control ... 15 0				
Uno Outside Control ... 18 0				
Uno Comet Top ... 15 0				
Uno Comet Top Neon ... 17 6				
Es Es Minor ... 10 0				
Es Es Major ... 15 0				
Es Es Sentinel ... 28 0				
Elephant Standard ... 18 0				
Elephant Key Set ... 18 0				
Rena Top/Control ... 20 6				
Rena Top/Control with Neon ... 22 6				
Wizard 10 0, 12 6, 18 0				
OUTSIDE FITTING THERMOSTATS				
Constat Q.K./Neon ... £1 5 0				
Constat J.L./Neon up to 1,000w. ... £1 16 0				
Springfield ... £1 5 0				
Slik-stat ... £1 2 0				
THERMOMETERS				
Es Es Dumpy ... 6 6				
Hykro Spirit Thermometer ... 3 0				
Uno Spirit Fish/tank Floating Spirit ... 2 6				
Uno Blue line ... 4 6				
Uno Perspex Back Mercury ... 6 3				
Spare Dumpy Rings ... 4 6				
Tim outside fitting ... 12 6				
METAFRAME HALF REFLECTOR				
16x8 in. ... £1 0 10				
20x10 in. ... £1 3 4				
24x12 in. ... £1 5 1				
30x12 in. ... £1 11 3				
METAFRAME FULL HOOD				
16x8 in. ... £1 16 0				
20x10 in. ... £2 1 4				
24x12 in. ... £2 7 4				
30x12 in. ... £2 18 11				
STOW-A-LITE				
20x10 in. ... £3 19 4				
24x12 in. ... £5 4 6				
30x12 in. ... £5 15 8				
BOW FRONTED BOOKCASE SETS				
48x15 ... £32 0 0				
BOW FRONTED WITH PLAIN STANDS				
24x15x12 in. ... £12 10 0				
30x15x12 in. ... £15 0 0				
36x15x12 in. ... £16 0 0				
48x15x10 in. ... £22 10 0				
TWO TIER STANDS				
18x10x36 in. ... £1 17 6				
18x12x36 in. ... £2 2 6				
24x12x36 in. ... £2 7 6				
30x12x36 in. ... £2 15 0				
30x15x36 in. ... £3 2 6				
36x12x36 in. ... £3 5 0				
36x15x36 in. ... £3 10 0				
48x12x36 in. ... £4 5 0				
48x15x36 in. ... £5 0 0				
VICTOR ALL OVER SHADES				
18x10 in. ... £1 2 6				
18x12 in. ... £1 5 0				
24x12 in. ... £1 7 6				
30x12 in. ... £1 12 6				
30x15 in. ... £1 17 6				
36x12 in. ... £2 0 0				
36x15 in. ... £2 5 0				
48x12 in. ... £2 12 6				
48x15 in. ... £3 2 6				
ARBE PLASTIC AQUARIUMS				
Bow fronted				
18x12x11 in. ... £8 5 0				
23x12x11 in. ... £9 17 6				
24x15x12 in. ... £12 17 6				
36x12x14 in. ... £16 19 0				
36x15x14 in. ... £22 10 0				
FANTASY GRAVEL				
Mottled Lavender ... 5 0				
Mottled Green, Mottled Red, Mottled Primrose, Mottled Blue, Gloss Black, Matt White ... 3 0 per lb.				
p. & p. 2 6				
PUMPS AND FOUNTAINS				
Sookes Gdn. Fnt. ... £7 19 6				
Float Assembly ... £1 10 0				
Eheim 388 ... £10 0 0				
Eheim (Single) ... £8 0 0				
Eheim Single (salt) ... £11 0 0				
Eheim (Double) ... £15 0 0				
Eheim Double (salt) ... £16 10 0				
Otter with fountain or waterfall kit ... £9 17 6				
AIR PUMP				
Summit ... £1 1 0				
Model "D" ... £3 3 0				
Super Summit ... £1 5 0				
Montrose Minor ... £1 1 0				
Montrose Major ... £1 4 0				
Quiko Pump ... £1 5 0				
Mini Pump ... £1 1 0				
Fairy Pump ... £1 5 0				
Star ... £1 19 0				
Jnr. Zoobako ... £2 2 0				
Zoobako ... £2 14 0				
Silenta ... £3 0 0				
Biko (twin outlet) ... £5 0 0				
Rena ... £2 10 0				
Rena 100 ... £1 15 0				
AIR PUMPS ACCESSORIES				
Nylon clamp ... 1 0				
Tubing clamps ... 1 6				
T-pieces ... 1 0				
3-way pieces ... 1 3				
Small oblong diffuser stone ... 1 3				
Stone with 12 in. stem ... 1 8				
Square diffuser stone ... 1 6				
Square diffuser stone with stem ... 1 10				
Diffuser stems 12 in. ... 5 5				
15 in. ... 6 6				
24 in. ... 10 10				
P.V.C. flexible non-toxic air tubing ... 3 3				
per ft. ... 3 3				
Rubber air tubing per ft. ... 3 3				
P.V.C. air tubing 60 ft. coil ... 7 6				
Hyflo regulator valve ... 5 0				
Hykro gang valves ... 3 6				
Air Line Valves ... 3 6				
AIR PUMP SPARE PARTS				
Fairy Diaphragms ... 1 3				
Fairy Air Chambers ... 1 9				
Zoobako Diaphragms ... 2 9				
Biko Diaphragms ... 2 9				
Silenta ... 2 6				
Montrose ... 1 6				
Rena Diaphragms 2 for ... 4 0				
Summit Diaphragms ... 4 6				
RUBBER SUCKERS				
Knob type ... 3 0				
Double sided ... 4 4				
Hykro Plastic ... 4 6				
FILTRATION ACCESSORIES				
Brosiam Glass Wool ... 1 6				
Brosiam Activated Carbon ... 2 0				
Jaynor spun glass ... 1 6				
Jaynor filter carbon ... 1 6				
Datam glass wool ... 1 3				
Datam glass silk ... 1 3				
Datam filter carbon ... 1 3				
Datam Aq. peat ... 1 3				
Nylon filter medium ... 1 6				
Sterasyt ... 5 3				
Datam Filter Pads ... 2 6				
CLEANING EQUIPMENT				
Windmill Air Rejector ... 10 0				
Windmill Hand Rejector ... 15 0				
Aqua Vac Standard (Battery) ... 46 8				
Aqua Vac Super (Battery) ... 56 8				
Spare bags 5 for ... 4 0				
Windmill Hand Rejector spare bags ... 1 6				
Windmill Air Rejector spare bags ... 1 6				
Windmill Hand Rejector spare bulb ... 2 6				
Windmill Rubber Algae Scraper ... 3 6				
Windmill Blade Algae Scrapers ... 3 0				
Aluminium Algae Scraper ... 2 0				
Hykro 3-in-1 scraper ... 3 0				
Windmill Automatic Syphon ... 4 6				
Windmill Fishtail Syphon ... 2 0				
Rubber tubing for syphon per ft. ... 3 0				
Windmill Dip Tube 15 in. ... 3 0				
Hykro take-apart sediment remover 12 in. ... 3 9 15 in. ... 4 0				
Secca Tonge ... 4 6				
Planting Sticks ... 1 9				
HEATER HOLDERS				
Windmill Heater Holder ... 1 6				
Heater Bracket ... 2 0				
Uno Uni-dip Heavy Moulded Plastic ... 1 6				
Spare Knob Suckers for heater holders ... 3 3				
BREEDING TRAPS				
Windmill combined breeding and rearing ... 19 6				
Hykro 3-in-1 ... 7 0				
Reliant 3-in-1 ... 15 0				
Gro-Wel 5-way ... 21 6				
American ... 21 6				
Hykro fish breeders, fine and coarse ... 6 0				
AQUAMASTIC				
1 lb. tin 2 3-p. & p. 2 6				
2 lb. tin 3 9-p. & p. 3 6				
4 lb. tin 6 0-p. & p. 4 6				
7 lb. tin 9 4-p. & p. 6 0				
14 lb. tin 17 4-p. & p. 9 0				
DUROGNOST				
Water hardness testing kit ... 17 6				
Spare tablets Pkts. of 10 Strength N.I. or N.S. 2 0				
Indicators each ... 6 0				
COLORMETER PB				
pH testing kit ... 37 6				
MISCELLANEOUS				
Hykro Aquo Sealer ... 2 0				
Hykro Leak Stopper ... 1 3				
Aquastop ... 2 6				
OTHER FISH FOODS				
Chlorella meal 2 6 and 5 3				
Wheat Germ Flakes ... 1 3				
Shrimp Meat, Medium ... 2 3				
Small ... 1 3				
Turtle Food, Large ... 2 3				
small ... 2 3				
Infusoria Powder ... 3 6				
Conditioning Goldfish Food Large ... 2 0				
Conditioning Goldfish Natural, Large ... 1 3				
Glow Tablets (30 tabs.) ... 3 6				
Treat Packs (7 different foods) ... 8 0				
Liquid small fry Live-bearers ... 2 6				
Baby Food Egglayers ... 2 6				
Brine Shrimp Packs ... 8 6				
Miracle freeze-dried worms ... 4 6				
Miracle freeze-dried brine shrimp ... 4 6				

Please mention PFM when writing to advertisers

HARD COVER AQUATIC BOOKS		FEEDING ACCESSORIES		FISH FOODS	
Illustrated Dictionary of Tropical Fishes (Frey)	70 0	Windmill Floating	1 4	Breslam Tropical Fish Food...	1 9, 2 9, 10 0, 17 4
Encyclopedia of Tropical Fish (Axelrod)	45 0	Windmill Feedwell Dry	1 0	Breslam Bio-Vit	46, 1 4
Exotic Aquarium Fishes (Jones)	35 0	Windmill Feedwell Live	1 0	Breslam Pond Fish Food	1 4
Tropical Fish as a Hobby (Axelrod)	35 0	worm feeder	1 4	Surfgrow	1 4, 3 4, 5 0, 6 4, 17 4
How to keep & breed Tropical Fish (Dr. Emmens)	40 0	Windmill Feedwell Live	1 4	Datum Dried Daphnia	1 4, 2 4
Salwater Aquarium Fishes (Axelrod)	45 0	and dry feeder	2 0	Datum Shrimp	1 4
All About Tropical Fish (Hickmury)	45 0	Feeding dry feeders	1 0	Datum Ant Eggs	46, 1 0
Color Guide to Tropical Fish (Axelrod)	12 4	Feeding warm and dry	1 4	Datum Pond Fish Food	3 4
Fishes in Colour (Gwynne Vevort)	22 4	feeders	1 4	Exotic Flakes	1 4
Tropical Aquarium Fishes	150 0	Hykro fountain-style feeders	2 0	Hykro Flakes	1 0
Exotic Tropical Fishes (Loose Leaf)	150 0	Small 1 9	2 0	Hykro Natural Flakes	1 0
Exotic Tropical Fishes (Bound Cover)	150 0	Uno bowl feeder	1 4	Hykro Shrimmeal	1 0
Freshwater Fishes of the World	22 4	Uno stock-in square	1 4	Hykro Dried Flies	1 0
A Manual of Aquatic Plants (Roe)	34 0	Floating dry feeder square	1 4	Hobby Fish Food	2 0
Aquarium Plants (De-Wit)	18 0	Ex Ex Micro Matt	2 0	Hobby Leaf green flakes	2 0, 7 0
Under the Sea (Burton)	18 0	Warmes Alive Auto worm	9 0	Hobby Tonic Flakes	2 0, 7 0
Tropical Fish in the Aquarium (Lodewijks)	18 0	feeder	9 0	Hobby Fish Food (Breeder's Pack)	7 0
Freshwater Tropical Aquarium Fishes (Harvey & Hems)	70 0			Hobby 'Blue Daily'	7 0
Aquarium Care (Gunter Starb)	70 0			Wunderbar	3 4, 4 9, 12 4
SOFT COVER BOOKS		WARDLEYS FISH FOODS		REMEDIES	
Tropical Fish (T.F.H. Publ.)	15 0	Vitaliser mix (8 foods in one)	2 3	Wardleys	
Electricity in the Aquarium (Warburton)	7 4	Supremix Conditioner	1 3	Halamid Tablets (new)	4 0
A Manual of Aquatic Plants (Roe)	17 4	(Fine, Med., Coarse)	1 3	Vitamin Tablets	1 4
Starting Right with Tropical Fish (Gannon)	6 0	Supra-Homogenised	2 4	Anti-Chlorine Tablets	1 4
Starting Right with Goldfish (Gannon)	6 0	Micro Pelleted Food	2 4	Treasure Chest Neutraliser	3 0
All About Guppies (Axelrod & Whitner)	12 0	(Fine, Med., Coarse, Ex. Coarse)	8 0	Turtle Block Neutraliser	3 0
Garden Pools (Paul Statten)	6 0	Vitaliser (Fine, Med., Coarse)	2 3	pH Test Kit—	
Diseases (Rolf Gaiser)	6 0	Hi-Glow '30' Colourfood	4 4	Junior	7 4
How to Keep & Breed Tropical Fish (Dr. Emmens)	32 4	(Fine, Med., Coarse, Community)	4 4	Senior	16 4
All About Aquariums	9 0	Fry Fare Guppy food Lge.	2 4	Bromthymol Blue pH Indicator	4 0
The Educational Aquarium	12 0	Molly Fare	2 4	Aquatic Tonic (general tonic and remedy)—	
Tour Terrarium	4 0	Fancy Guppy Food	2 4	4.8.oz.	3 3
Beginning with Tropicals (Schoffield)	4 0	Guppy fare Ex. Large	4 4	Anti-Chlorine Compound—	
All About Breeding Tropical Fish	12 0	Small 1 3	2 3	4.8.oz.	2 4
Marine Tropicals	12 0	Small 2 3	2 3	1.8.oz.	2 4
Breeding Aquarium Fish	12 4	Small 3 3	2 3	4.8.oz.	8 0
Aquarium Plants	10 4	Small 4 3	2 3	Fungus remedy (colourless and stainless)—	
Aquarium Hygiene	10 4	Small 5 3	2 3	1.8.oz.	3 3
Pond Life in the Aquarium	10 4	Small 6 3	2 3	4.8.oz.	10 0
T.F.H. PUBLICATIONS 3 0 EACH		TETRAMIN FISH FOODS		Tetracare	
Plates and Movies		Tetramin Staple Foods for		at 4 6 each	
Tropical Fish Guide	Colourful Livebearers	Tropicals.		General Tonic. As a regular tonic in the Aquarium	
Beautiful Bettas	Aquarium/Water Chemistry	Size 1	1 11	Fluoride. Aquarium plant and water softener.	
Tiny Tetras	Colourful Egg-layers	.. 2	3 3	Blackwater tonic. Reproduces natural tropical soft	
Beautiful Goldfish	Tropical Fish Primer for	.. 4	24 6	acid water conditions in Aquariums.	
	Beginners	.. 5	87 3	Fungusstop. Cures body fungus, fin and tail rot etc.	
		Large Flake	7 4	Contra Ick. Cures White spot, shimmy and Costia.	
		Tetramin Staple Food in		Contra Chlorine. Neutralises chlorine contents of	
		Tablet Form	3 0	fresh tap water.	
		Tetramin Conditioning Food	4 3		
		.. Colour Pride	4 3		
		.. Growth Food	4 3		
		.. Guppy Food	4 3		
		.. Marine Staple Food	4 4		
		(for Marine Fish)	4 4		
		Tetrafin Staple Food for Gold-			
		fish.			
		Size 1	1 10		
		.. 2	3 10		
		.. 3	12 4		
		.. 4	6 4 0		
		.. 5	5 3 2 4		
		.. 6	5 3 2 4		
		.. 7	5 3 2 4		
		.. 8	5 3 2 4		
		.. 9	5 3 2 4		
		.. 10	5 3 2 4		
		.. 11	5 3 2 4		
		.. 12	5 3 2 4		
		.. 13	5 3 2 4		
		.. 14	5 3 2 4		
		.. 15	5 3 2 4		
		.. 16	5 3 2 4		
		.. 17	5 3 2 4		
		.. 18	5 3 2 4		
		.. 19	5 3 2 4		
		.. 20	5 3 2 4		
		.. 21	5 3 2 4		
		.. 22	5 3 2 4		
		.. 23	5 3 2 4		
		.. 24	5 3 2 4		
		.. 25	5 3 2 4		
		.. 26	5 3 2 4		
		.. 27	5 3 2 4		
		.. 28	5 3 2 4		
		.. 29	5 3 2 4		
		.. 30	5 3 2 4		
		.. 31	5 3 2 4		
		.. 32	5 3 2 4		
		.. 33	5 3 2 4		
		.. 34	5 3 2 4		
		.. 35	5 3 2 4		
		.. 36	5 3 2 4		
		.. 37	5 3 2 4		
		.. 38	5 3 2 4		
		.. 39	5 3 2 4		
		.. 40	5 3 2 4		
		.. 41	5 3 2 4		
		.. 42	5 3 2 4		
		.. 43	5 3 2 4		
		.. 44	5 3 2 4		
		.. 45	5 3 2 4		
		.. 46	5 3 2 4		
		.. 47	5 3 2 4		
		.. 48	5 3 2 4		
		.. 49	5 3 2 4		
		.. 50	5 3 2 4		
		.. 51	5 3 2 4		
		.. 52	5 3 2 4		
		.. 53	5 3 2 4		
		.. 54	5 3 2 4		
		.. 55	5 3 2 4		
		.. 56	5 3 2 4		
		.. 57	5 3 2 4		
		.. 58	5 3 2 4		
		.. 59	5 3 2 4		
		.. 60	5 3 2 4		
		.. 61	5 3 2 4		
		.. 62	5 3 2 4		
		.. 63	5 3 2 4		
		.. 64	5 3 2 4		
		.. 65	5 3 2 4		
		.. 66	5 3 2 4		
		.. 67	5 3 2 4		
		.. 68	5 3 2 4		
		.. 69	5 3 2 4		
		.. 70	5 3 2 4		
		.. 71	5 3 2 4		
		.. 72	5 3 2 4		
		.. 73	5 3 2 4		
		.. 74	5 3 2 4		
		.. 75	5 3 2 4		
		.. 76	5 3 2 4		
		.. 77	5 3 2 4		
		.. 78	5 3 2 4		
		.. 79	5 3 2 4		
		.. 80	5 3 2 4		
		.. 81	5 3 2 4		
		.. 82	5 3 2 4		
		.. 83	5 3 2 4		
		.. 84	5 3 2 4		
		.. 85	5 3 2 4		
		.. 86	5 3 2 4		
		.. 87	5 3 2 4		
		.. 88	5 3 2 4		
		.. 89	5 3 2 4		
		.. 90	5 3 2 4		
		.. 91	5 3 2 4		
		.. 92	5 3 2 4		
		.. 93	5 3 2 4		
		.. 94	5 3 2 4		
		.. 95	5 3 2 4		
		.. 96	5 3 2 4		
		.. 97	5 3 2 4		
		.. 98	5 3 2 4		
		.. 99	5 3 2 4		
		.. 100	5 3 2 4		

ESTIMATED APPROX. POSTAL CHARGES

Aquariums, Stands, Gravel, Mastic and Rockwork at owners' risk. Carriage at cost invoiced after despatch
 2s 6d for orders up to 10s 0d; 4s 0d up to 20s 0d; 5s 0d up to 40s 0d; 6s 0d up to 60s 0d

TACHBROOK TROPICALS LTD., 244 VAUXHALL BRIDGE ROAD, LONDON, S.W.1

"I saw your advertisement in PFM"

The finest coldwater fish food
available anywhere is *without doubt*



SURE GOLD

The pelletised food

NO DUST
NO BISCUIT
NO DRIED FLIES

Only the finest possible
ingredients to give a fully
balanced diet

**PACKED IN
TWO SIZES**

HOME PACK 1s. 6d.
POND PACK 4s. 0d.

And available from all good
aquarist supply shops now



Another quality product from:

S.C.A.N. LTD., OLD BATH RD., COLNBROOK,
SLOUGH, BUCKS.