Another great new
FISH FOOD from Thomas’s

MAGIC WORMS
FREEZE DRIED TUBIFEX
Suitable for all Tropicals, Goldfish, Marines, Turtles
NEEDS NO REFRIGERATION!
Petcraft Magic Worms are freeze-dried by a special process which preserves the fresh flavour and nutritional value—compressed and cut into cubes, packed in sealed screw top plastic containers to retain their freshness.
IT’S ‘MAGIC’ — TO WATCH YOUR FISH GO FOR THEM!

PRICE 3/3
5 gm. container
Guaranteed min. 55% protein content
CAN BE FED DAILY

NOW!
Truly wonderful value for money!
NO INCREASE IN PRICES
BiOrell
FLAKE FISH FOOD
Contains Vital Natural Nourishment
TOP QUALITY — HIGH PROTEIN FOOD

SPECIAL ANNOUNCEMENT
The import cost of BIORELL food has risen due to devaluation, but we are maintaining the prices UNCHANGED for some time ahead and look to increased sales to offset the effect of higher costs.
QUALITY IS UNCHANGED

NOTE THE PRICES
★ Staple food for all Tropical Fish—Available in 4 sizes
STANDARD — 1/11 EACH BREEDERS SIZE — 6/9
DOUBLE — 3/- EACH 1 LITRE SIZE — 22/6
★ Special Food for all GOLD and COLD-WATER FISH:
POPULAR SIZE only — 1/3

From all Pet and Aquarist stores. Look for the range on display racks
Sole U.K. Concessionaires: THOMAS’S LTD. SQUARE ROAD HALIFAX

Please mention PFM when writing to advertisers
Comments and Quotes

- Cichlid ‘Imprinting’ - Must White Spot be Sold? - Fishkeepers at the Capital

Fish Follow False Mums

A PATTERN of animal behaviour that has attracted much attention from zoologists in recent years is the one known as ‘imprinting’. This is the response that a young animal makes to its mother as the result of seeing her from its earliest days of life. The development of this response can, under abnormal conditions, occur even in the absence of the mother and thus strange attachments can be formed between the young animals and adults of completely different species. One of the best-known examples of this were the ducklings that regarded Konrad Lorenz, who had reared them, as their mother and followed him everywhere he went.

Two Belgian scientists, J. Cl. Ruwe and J. Voss of the University of Liège, have reported that the fry of some species of Tilapia cichlids also show imprinting. When they reared batches of Tilapia mossambica and Tilapia macrochir away from the parents the fry would follow moving models introduced into the aquarium and generally acted towards such a model as they do normally to their mother.

These two species are mouthbreeders, with the fry normally leaving the mother's mouth about 9-12 days after their spawning and remaining with her until about 30 days after spawning. The scientists observed that if the fry first saw the models at any time between 9 days and 22-23 days after spawning the imprinting behaviour was shown, but the fry raised to 22-23 days and then introduced to the models showed only fear of them and escape movements. There is obviously a short period during development in which the fry will accept a false 'mother', but after this stage the imprinting does not occur.

When the fry of other Tilapia species (T. guineensis and T. galilaeus) were tested in the same kind of experiment it was found that these fry did not readily accept the models. This independence of an offered substitute for a mother is perhaps explicable for these species when it is realised that these types are not mouth-brooded by the mother but are normally reared in simple nests with attention from both male and female parents.

The Belgian workers have pointed out an advantage that results for mouthbreeding Tilapia in some of the artificial lakes in Africa. Periodically the water level of these lakes is made to fall quite suddenly, and whereas the fry of nest-making species may become stranded out of water as a consequence of the water lowering, the mouth incubators carry off their young fry, or the free-swimming fry follow their mothers, into the deeper and safer regions.

Plain Speaking

‘CAN you not do something about the people who are continually selling white spot to the public?’ This question was asked of PFN by a reputable dealer who was exasperated by the disillusionment with the hobby that he saw in customers who had persistently lost fish through this disease.

Although the question looks to be a naive one, we know just what the dealer meant by it. He was not assuming the impossible god-like attitude of someone who boasts
‘My fish never have white spot’. His attack was directed against those who act as if with head in the sand by continuously selling from tanks known to be infested.

The practice of quarantining tropical fishes for at least 10 days before sale is a growing one, we are glad to say. However, there are some sources of tropical fish whose mode of operation is such that a quarantine system can never be effectively used. We cannot agree with the attitude that customers who patronise such sources to save sixpences on the price of fish deserve what they get. Beginners buy diseased stock in ignorance, but the sellers we are criticising certainly do not sell in ignorance.

It is indeed frustrating for the experienced dealer to be faced with the worried novice who thinks pathetically that his continued losses of fish are the result of his own negligence, when in fact it is obvious that he has time and again been sold trouble somewhere else. Can those who care about this situation do anything to improve things?

The facts are that the disease in tropical fish is curable, it is eradicable from tanks and it is possible to offer fish for sale that are free from disease for at least 90% of the time. Outbreaks can occur through slip-ups in the best regulated systems, but the operator with a good system, controls it and expeditiously stamps it out. Parasite-infested tanks are not used again until adequately treated; diseased fish are not sold (and this does not mean taking out the ‘sloppy ones’ and selling the rest!). All this costs time and money. But the system can also bring great peace of mind for the dealer, a first-class reputation with his customers and will ensure that the hobby does not get a false reputation with the public of being ‘difficult’.

The short answer to the question with which this comment opened, is ‘Not much!’. Plainly speaking, as long as greed, laziness and sheer carelessness are features that individuals cannot or will not recognise and remedy in themselves, they are unlikely to remedy the rot in their business dealings. But PETFISH MONTHLY believes that in raising this matter it will ensure that, at least, pleas of ignorance from the guilty cannot be entered.

Fishkeepers at the Capital

THE AQUARIUM SHOW 1968, sponsored by PETFISH MONTHLY and organised with the co-operation of the Federation of British Aquatic Societies, promises to be a London spectacle that will bring fishkeepers from all over the country to the capital.

Expressions of the interest aroused by the news of this national AQUARIUM SHOW have been reaching us from all parts of the country. The magnitude of the response by F.B.A.S., affiliated societies to a questionnaire sent to them concerning the Show has been most impressive and firm offers of help and support have been received.

A meeting with club delegates in April has enabled some of the preliminary work to be completed and organisation now starts in earnest. Trade response has also been very keen and there should be one of the finest displays of fishes, equipment and all the aquarist’s needs yet to be put before the public.

News of progress and further developments will be given each month in the pages of PFM. Don’t miss these details!

Fish Showing

CONGRATULATIONS to Arpee for making such a good reply to Mr. Andrews of Bournemouth (PFM, April). I am sure that ‘Personal Comment’ is enjoyed each month by most aquarists.

Each time I meet a ‘pot hunter’ I find one must listen to how he lost either to an inferior fish or even by clever fish positioning etc. Arpee is a credit to your magazine and most people would, I feel sure, rather read a page of Arpee than a volume of pot hunting. Let’s hope that the Mr Andrews of the fish world soon obtain all their silverware; then we can sit back and enjoy our fish in natural surroundings and not in screw-top jars.

Maldon, Essex D. G. KEMPEN

Judging Marines

WE are interested to note that the Federation of British Aquatic Societies have recently produced a judging points system for furnished marine aquariums. Whilst we are all in favour of beneficial developments relating to the promotion of the marine fishkeeping
Come yourself . . . bring your family . . . your friends, to
THE FIRST NATIONAL FURNISHED
AQUARIUM EXHIBITION
At St. George’s Hall, Bradford on Wednesday, Thursday, Friday, Saturday and Sunday,
June 12th, 13th, 14th, 15th and 16th.

MANY TRADE STANDS by leading manufacturers of equipment, food, etc. with manufacturer’s representatives in attendance to talk to you and help you.

On show will be thousands of exotic tropical fish and aquarium plants . . . beautiful fish from far-away places, many of which you may not have seen before. They will be shown in aquariums decorated by experts from all over the country, who will be competing for big cash prizes and the exhibition will present a wonderful panorama of "living pictures", each one different and full of interest and movement.

For families who “come for the day” there will be seating accommodation for 500 so that visitors can rest and relax from time to time and refreshments will be on sale in the hall.

The exhibition will be open to the public from 10.30 a.m. to 9 p.m. on Wednesday, Thursday, Friday and Saturday, June 12th, 13th, 14th and 15th, and from 10 a.m. to 5 p.m. on Sunday June 16th admission is 2/6 AT the door and on Sunday by programme only, obtainable at the door.

ADEQUATE PARKING SPACE within 50 yards of the exhibition hall and the main line station and bus station are within easy walking distance.

IF YOU WISH TO EXHIBIT, Please turn to page 82 for entry form.

INTERESTED IN WATER GARDENING?
Then Visit the KEITH BARRACLOUGH WATER GARDENING DEPARTMENT
Here you will see extensive stocks of fish, plants and ALL necessary equipment and material. And a SPECIAL DISPLAY OF UNDERWATER ILLUMINATIONS, WATER FOUNTAINS, etc.

Available now from stock. Breeding pairs of goldfish, shubunkins and ornamental fish.

Prices from 15/- per pair.

If you cannot visit us, please write and we will send you our Water Gardening list.

keith barracough
AQUARIST

TERMS: Cash with order. Mail order delivery: by return throughout the country (FISH BY RAIL within 3 days). LIVE DELIVERY GUARANTEED.

OPEN DAILY 9 a.m.-6.30 p.m. 9 a.m.-8 p.m. each Friday. Half-day closing Wednesday, 1 p.m.

568, GREAT HORTON ROAD, BRADFORD 7, YORKS. Telephone: BRADFORD, 73372.

COME AND VISIT US WHEN YOU ARE NEAR BRADFORD. You can park as long as you want outside the door.

"I saw your advertisement in PFM"
A NEW CONCEPT IN AQUARIUM ACCESSORIES

NUOVA

OUTSIDE FILTER

A de-luxe super filter designed for the true aquarist
Fully adjustable to any size frame
Hygienic, dismantles for easy cleaning
Extends to suit any arrangement
Extra airlift and syphons available
Tubing and fittings for special installations

U.K. Distributors:

Tradefish (Aquarium) Co.
BURDON ROAD, SUNDERLAND

Patriotic fish rise to Phillips Flaked Food

New! A first-class, all-British preparation, Phillips new flaked fish food is highly nutritious and appetising. Fish rise to it with enthusiasm. Furthermore, every flake contains saprolegnif—the exclusive Phillips ingredient that guards against 'cotton wool' fungus.
Buy British—buy Phillips!
Two types: Cold water and tropical. One price: 1s. 11d. per drum.
PHILLIPS YEAST PRODUCTS LTD. Park Royal, London NW10

Please mention PFM when writing to advertisers
New

THE MOST EXCITING RANGE OF BOOKS FOR AQUARIUM ENTHUSIASTS IN FULL COLOUR

Enjoy a SALTWATER AQUARIUM

Know how to BREED TROPICAL FISH

The Enjoy Series
32 pages
3/- each

The Know Series
64 pages
7/- each

All these to choose from

- Enjoy Your Angelfish
- Enjoy Your Barb
- Enjoy Your Breeding Egglayers
- Enjoy Your Cichlids
- Enjoy Your Catfish
- Enjoy Your Discus
- Enjoy Your Fighting Fish from Siam
- Enjoy Your Goldfish
- Enjoy Your Gouramis and Other Anabantids
- Enjoy Your Fancy Guppies
- Enjoy Your Guppies
- Enjoy Your Killifish
- Enjoy Your Mollies
- Enjoy Planting Your Aquarium
- Enjoy Your Platys and Swordtails
- Enjoy A Salt Water Aquarium
- Enjoy Your Tetras
- Prevention And Care - Tropical Fish Diseases
- Enjoy Your Tropical Fish Picture Book
- Know Your Aquarium
- Know How To Breed Tropical Fish
- Know How To Breed Egglayers
- Know How To Breed Livebearers
- Know Your Goldfish
- Know Your Guppies
- Know How To Keep Salt Water Fishes

PLUS 96 OTHER VOLUMES ON PETS OF EVERY KIND

Copyright throughout the United Kingdom
At Your Pet Shop
WE OFFER
QUALITY & QUANTITY

GOLDFISH & SHUBUNKINS

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>1/6</td>
</tr>
<tr>
<td>Medium</td>
<td>2/6</td>
</tr>
<tr>
<td>6&quot;</td>
<td>7/6</td>
</tr>
<tr>
<td>7&quot;-8&quot;</td>
<td>10/-</td>
</tr>
<tr>
<td>8&quot;-9&quot;</td>
<td>15/-</td>
</tr>
<tr>
<td>9&quot;-10&quot;</td>
<td>25/-</td>
</tr>
</tbody>
</table>

COMETS

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>3/6</td>
</tr>
<tr>
<td>Medium</td>
<td>4/6-6/6</td>
</tr>
<tr>
<td>6&quot;</td>
<td>15/-</td>
</tr>
<tr>
<td>7&quot;-8&quot;</td>
<td>17/6</td>
</tr>
</tbody>
</table>

NYMPHS

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>3/6</td>
</tr>
<tr>
<td>Medium</td>
<td>6/6</td>
</tr>
<tr>
<td>Large</td>
<td>15/- 25/-</td>
</tr>
</tbody>
</table>

TENCH

<table>
<thead>
<tr>
<th>Size</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>3/6-25/-</td>
</tr>
<tr>
<td>Golden</td>
<td>5/6-30/-</td>
</tr>
<tr>
<td>Golden Orfe</td>
<td>3/6-27/6</td>
</tr>
<tr>
<td>Silver Orfe</td>
<td>3/6</td>
</tr>
<tr>
<td>Dogfish</td>
<td>5/-</td>
</tr>
<tr>
<td>Bitterling</td>
<td>5/-</td>
</tr>
</tbody>
</table>

Send S.A.E. for complete Plant and Marginal Lists

Minimum Order For Coldwater Fish 50/-
Prior 10/- carriage and packing

NEW “VELVECURE”

After successful results in our quarantine house we have now formulated our own velvet cure for tropical and coldwater fish 4/6 p.p. 6d.

Troubled with plant growth? Then try “Grolux” lighting from 65/- complete with starter and choke assembly.

We have recently enlarged our premises at Tolworth and have introduced another fifty tropical tanks expressly to quarantine imported fish. Newly arrived fish will automatically be isolated in these aquaria for a minimum of fourteen days and during which period these fish will not be for sale.

J. T. HUNT (AQUAPETS) LTD
17, LEELAND ROAD, WEST EALING, W.13
Tel. 01-587 2748

Opening Hours 9.00—5.30
Half-day Wednesday

SPECIALS

<table>
<thead>
<tr>
<th>Species</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. callirhum</td>
<td>15/-</td>
</tr>
<tr>
<td>Bedotia geayi</td>
<td>6/6</td>
</tr>
<tr>
<td>Cynolebias nigripinnis</td>
<td>20/-</td>
</tr>
<tr>
<td>Cardinals</td>
<td>6/6</td>
</tr>
<tr>
<td>Emperor Tetras</td>
<td>13/6</td>
</tr>
<tr>
<td>Nothobranchius guntheri</td>
<td>25/-</td>
</tr>
<tr>
<td>N. palmeri</td>
<td>18/6</td>
</tr>
<tr>
<td>Congo Salmon</td>
<td>18/6</td>
</tr>
<tr>
<td>Pelmatochromis thomasi</td>
<td>13/6</td>
</tr>
</tbody>
</table>

Please mention PFM when writing to advertisers
LETTERS

Continued from page 46

hobby we cannot let this document go unchallenged. In our opinion, it is nothing but a farce, and would like to ponder upon the following thoughts:

(i) For how long has this system been on trial by the F.B.A.S. before its adoption by them?
(ii) How many marine aquarists (by this we refer to both tropical and native marine) are to be found on the Council of the Federation, or for that matter, the Judges and Standards Committee who presumably compiled this system?
(iii) Have the Federation made any attempt to find out what the marine aquarists in the U.K. feel on this score?

I would now like to answer the above three points on behalf of our Society; firstly, our judging system, and after all who better to set a standard than the hobbyists who keep and exhibit them, was on trial operation as long ago as 1966! Our current system has been in operation since December of that year. It was compiled by our Judges, Shows and Standards Committee comprised of six members, all of whom bar one keep solely marine fishes. These officials had the year’s previous M.S.A.S. research programme to assist them, and access to the members themselves for their views, yet here comes the rub. When we approached the F.B.A.S. with a view to producing one uniform set of standards (apart from having to wait ages for a reply), and eventually getting them to meet our representatives, they deemed our system ‘unsuitable’.

We feel most strongly that their whole attitude to this point has been one of ‘Ignore the people who keep them, what do they know any better than us?’.

We would be interested to receive answers to the points raised above, as it seems another rift has reared its ugly head in our hobby, and this time one that could so easily have been overcome—we tried.

GERALD H. JENNINGS
Director, The International Marine Study Society

The Aquarium Show

MAY I take this opportunity to say thank you to PETFISH MONTHLY for the wonderful gesture of sponsoring the forthcoming Aquarium Show. The greatest respect and appreciation that all aspects of the hobby can show is to give you all the support and response that you require, in making the Show the greatest scene the public have been able to witness. I, and I am sure many other aquarists, are with you all the way in this venture, and on behalf of everybody in the aquarist world, I wish the Show every success.

LEN SMITH
Secretary, Bethnal Green A.S.

The response to our announcement of The Aquarium Show has been extremely encouraging, and offers of help and promises to support the Show have reached us from individuals, societies and the aquarium trade, Council members and officers of the Federation of British Aquaric Societies who have formed the Show Committee have also been greatly encouraged by the degree of interest shown, we know, and we are all very much aware how much the success of the Show depends on this enthusiasm and desire to back it up with active participation. Thanks Mr Smith, and to other correspondents.—EDITOR.

I WOULD like to take this opportunity, on behalf of all our member Societies, to wish you every success with The Aquarium Show to be held in London during November.

This show has created an appreciable amount of interest in the North, and it is hoped that our Societies will play their part in making the Show a success.

D. CARR
Secretary, Association of Yorkshire Aquarist Societies

Aquarium Sharp-shooters

ARCHER fish obtain their main source of food (flies and other insects) by ejecting a remarkably well-aimed jet of water that knocks the insect on to the water surface. There have been reports from zoos of puffer fish blowing water at the observer in much the same manner. What I should be interested to learn is whether other aquarists have had any experience of gouramis doing this?

In my own community tank I have a female dwarf gourami and at feeding times, just before I drop in the food, it often directs a jet of water at my hand. Also, the gourami, along with my Siamese fighting fish, often jumps through the feeding rings at the surface of the water. These jumps are quite distinct leaps through the air (I might add that I have not been training them for a circus act!).

Another point I would like to raise concerns kuhli loaches. Because their swim bladder is too small to be of much use as a float they spend most of the time on, or near, the bottom of the tank. I have found, however, that when I top up the tank with fresh water, my kuhli loaches can always be found swimming about throughout the whole tank. Can these fish be especially sensitive to water changes?

Stoke-on-Trent, Staffs.

B. TAYLOR

Home for Big’uns

WE are again offering homes to large fishes who are fast outgrowing their tanks. These are required for the local Aquarium that this Society has taken over. We will arrange collection within a 60-mile radius.

6 Hurst Road, Eastbourne, COLIN GEORGE Secretary, Eastbourne A.S.
Sussex BN23 5

Social Events

RECENTLY I read in FPM Jim Kelly’s comments on the apparent lack of Christmas socials held by clubs. As you can observe (see Club News), Croydon A.S. and Freelance A.S. are very active in this field,
Invitations for these socials are usually extended to clubs in the South London area (at our last social we even had members from Reigate & Redhill) but until a couple of years ago response was very poor from these clubs, and I think this deters other clubs from holding a social.

D. H. CROWLEY
Secretary, Croydon A.S.

Water Hardness

I WOULD like to clarify the position regarding the conversions of water hardness units discussed in my letter in your January issue. Mr S. Carlo (PFM, March 1968) questions the validity of the conversion factors derived. I hope the following paragraph will serve to get these factors into perspective.

If we have a quantity of water of a hardness equivalent to x p.p.m. as calcium carbonate, the number of degrees DH = x/17.8 and the number of British degrees = x/14.3. Obviously x/14.3 is larger than x/17.8, which means that there are more British degrees of hardness than degrees DH in water of the same concentration of calcium carbonate. So, in order to calculate the number of degrees DH equivalent to a certain number of British degrees, the latter must be multiplied by a factor less than one, i.e. 14.3/17.8. In other words

\[ \text{DH} = \frac{14.3}{17.8} \times \text{British degrees}. \]

The converse argument can be used to derive the equation

\[ \text{British degrees} = \frac{17.9}{14.3} \times \text{DH}. \]

Redcar, Teesside
W. B. PEARSON

We regret that in the letter published in our March issue the figure 14.3 appeared incorrectly without the decimal point.—EDITOR.

**PFM Photo COMPETITION**

With the coldwater fish photographic entry (left) for the PFM Photo Competition (submitted by Mr H. A. Harry of Swansea, Glamorgan) was this little note on the subject of the picture:

'The minnow was caught by a little boy, with a rod and line, 4 years ago at our local boating lake. It has become a faithful pet with the children. The goldfish we had, which were many, never lived very long with us. We have thought of putting the fish back in the lake to give him his freedom, but we think he may be caught again. And he seems very happy in his bowl'.

As the picture selected this month from the entries being lined up for the final judging and display at The Aquarium Show in London this November, Mr Harry's minnow wins him one guinea. Have you made your entry yet? (It is not necessary to supply captions with entries and ultimate judging will be of photographs solely.)

There are no special categories of entry for this Competition. Photographs in black and white or colour (prints or transparencies) can show your favourite fish in close-up, the interior of your aquarium, fish breeding or other fish behaviour, or your garden pond. Each entry will be judged according to photographic merit as well as for its interest to fish-keepers. Main cash prizes will be £5 each, with subsidiary prizes of £2 each, plus a monthly chance of being paid one guinea if a picture is selected for printing in an issue of PFM appearing before final judging and announcement of results. Use the entry form from a current issue of PFM when sending your pictures and please read the Rules and Conditions for the Competition printed in the February issue of PFM.
BREEDER'S NOTEBOOK

The Dwarf Sunfish (Elasmobranchi evergladai)

By J. Lee

THE dwarf or pigmy sunfish first arrived in this country, I believe, from America, via Europe, round about 1926-27 and ever since has been disappearing from the shops for long periods of time. Even when they have appeared in the local pet stores they have been so small that they have largely gone unnoticed amongst the bigger species. This beautiful little fish hails from North and South Carolina, Georgia and Florida.

I first saw these fish some years ago and purchased eight of them from London. They were at the adult stage with the males darting up and down in good colour. The coloration is not difficult to describe. The males are a deepish brown or blackish blue, when in good condition, and become suffused on the body with gleaming green spots; the fins are edged with white. The female is a much heavier-bodied fish, light brown or tan in colour, with a pinkish coloured belly and colourless fins; at times, faint brown dots and dashes show up on the fish's back and sides.

With the permission of the dealer, I sorted four pairs out for myself and was agreeably surprised at the low price, only 5s. 6d. each. Some weeks after the fish were settled in their new home, with spring just round the corner, I decided to start to prepare for breeding. For the next week or two they were conditioned on a diet of small Daphnia, brine shrimp and micro worms. As the fish were small they were fed a liberal supply of these small live foods, and also included were Grindal worms and occasionally miniced or chopped Tubifex worms.

The tank used for spawning was 22 in. by 9 in. by 6 in., well scrubbed out in the usual way and disinfected with a strong solution of potassium permanganate. When it was thoroughly cleaned out, it was put in a fairly light position. The water used was very old filtered tap water, which, where I live, is neutral. [Later on in the year I had a spawning in the same tank in 2 parts of rainwater to 1 part of old tap water; I noticed it took them longer to spawn and the result was a smaller spawning.] The temperature at this first spawning, at the time the fish actually spawned, was 70°-75°F (21-24°C).

A trio of the dwarfs were put into the aquarium, one male and two ripe females, and to the tank I added a few crystals of rock salt. A week and a half later the fish began their courting procedure, which was very interesting indeed to watch in such a small fish. The male flashed in and out of the plants—small bunches of Myriophyllum at both ends and along the back, mixed with Ambulio, three to four clumps of green hairgrass in the centre, Ludwigia and a smol bush of Cryptocoryne hateliana, with a mixture of small Indian ferns, bladderwort and a light carpet of Riccia floating on the surface. This selection of plants seemed to suit the sunfish extremely well.

As the male danced up and down in front of the female, she would rest near the bottom and every now and again would meet him amongst the plants. With fins outspread, he would stay motionless at times in front of her until once more he coaxed her into the thickets with him. As the spawning took place, I noticed at the back of the tank on the sandy bottom a very tiny cluster of Riccia looking like a miniature nest, although the only eggs to be seen were those haging from the plants by a fine thread. But the male fish was seen to be hovering over this tiny nest during the spawning procedure and when the parent fish had been removed fry were subsequently seen to emerge from this nest.

The eggs were, of course, very tiny. Seen through a powerful magnifying glass, they seemed to be very slightly tinted a yellow or light-brownish colour. During the incubation period, I did not see many eggs with fungus at all, nor, while the fish were spawning, did I ever see them devour their eggs. The fry hatch out in about 60 to 72 hours, and they are very tiny, hanging there amongst the fine-leaved plants. At a first glance through the magnifying glass at this stage, the plants look as though they have been decorated with something, as the eggs hang quivering in clusters.

When the fry are free-swimming, they need the tiniest of living foods, so I fed them very small infusorians, Liquifry (egglayer) and the yolk of a hard-boiled egg pinched in the water. The spawning produced about 150 fry, but during the first 3 weeks quite a few died, as can be expected with such tiny fish, but on a final count the total was 85 fish. The fry grew steadily on brine shrimp, egg powder, very fine sifted Betemex, proprietary health food and micro worms. Later on they took fine sifted Daphnia, and when 2 months old they used to shoal at the front of the tank to feed on salmon paste squeezed on the end of a piece of cotton and dangled near the surface of the tank.

Pigmy sunfish, with good feeding and space, can reach the adult stage in about 4-5 months. In my experience in keeping this species, I soon found that they are very sensitive to temperature changes, in either direction—up or down the thermometer, so a bit of useful advice when dealing with them is to keep the temperature fairly
stable. They reached their best colour condition at about 65° to 68°F (18–20°C) in very old tap water. They simply would not tolerate fresh tap water. They just lost all their
colour until removed into a better environment.

Breeding these fish over a period of 2 years, I found that more females were produced than males, with the exception of one spawning which nearly broke even and was, incidentally, one of the largest spawnsings I had, with a final count of 140 fish, 80 or so of which were females.
The fish are a fine sight to see—the black or blue
flashes of the males amongst the light brown and pinks of the females. The odd bully can occasionally be detected amongst the males, and may have to be taken out and cooled off a little. When I first saw this species from a distance, I thought they were little male Cymobdias nigripinnis killifishes, but saw my mistake as I approached the tank. These little fish have given me great pleasure in breeding them and anyone who likes the miniature species should have great pleasure in adding them to their collection of tropical fishes.

**SCIENTIFIC NAMES OF FISHES — 8**

By H. J. VOSPER

In this series of articles it has been shown that scientific names serve special purposes, in that being of international understanding they provide a universal means of reference, while at the same time they serve as brief catalogues of known information regarding the fish. This information consists of: knowledge concerning relationships between fishes; clues to the whereabouts of information involving biology, structure, taxonomy etc.; whether or not the fish is a sub-species or variety; whether or not it is a member of a sub-generic group; whether there has been transfer from one genus to another.

Indeed, the numerous factors that may be incorporated within a full expression are such that incorrect usage is very strongly to be deplored. Therefore all brackets (and all forms of brackets) must be used in a proper fashion; generic and trivial names should be initiated by the proper capital and lower case letters respectively; sub-species should be distinguished from varieties. On the other hand, once a fish under discussion has been clearly defined there are standard methods by which the whole term can be shortened to retain clarity of meaning without repetitious pedantry.

It is not suggested that in discussion, in lectures or in general articles etc. full scientific names be employed at all times. For example, if one were lightly discussing a diet provided for the platy (Xiphophorus maculatus) then that form can be considered adequate; but if one were recording some breeding pattern or peculiarity of structure it would be necessary not only to ensure that future readers were in no doubt as to what fish was under consideration but also to provide information relating to the original descriptions etc., so that Xiphophorus [Platypoecilus] maculatus (Günther 1866) would be more suitable.

Full names may be omitted where a reader's attention is drawn to another work in which they do appear, or drawn to another work which itself refers to a source book in which full names and a synonymy occur.

Naturally, scientific names are somewhat awesome, particularly to beginners, yet constant use, allied to an appreciation that they not only define the species very exactly but are also statements of known evolutionary facts and sources of original reference, can subdue them and fit them into their proper place in aquarist 'jargon'.

While a full scientific name itself provides clues to the original work relating to a species, in the form of the author's name and the date, no reference concerns the origins of the genus. The best means of obtaining guidance on this point lies in a publication of the Zoological Society of London—a work known as NOMENCLATOR ZOOLOGICUS, of which the six volumes 50 far published contain the names of all genera and sub-genera in zoology from 10th Edition of SYSTEMA NATUREA (1758) to the end of 1955, together with the bibliographical reference for the original description. Volume 6 (literature for the years 1946–1955) contains addenda for previous years.

The published works from which names, information, suggestions and certain examples have been obtained are recorded in the references below, but the writer must also acknowledge the guidance and help received over the past years from Messrs. Millwood, Fraser-Brunner and Collins, also from Mr Toombs and others on the staff of the British Museum (Natural History).

**REFERENCES**

Davies, M. A. (1949). AN INTRODUCTION TO PALAEONTOLOGY (Murby, London.)


FISHES FOR THE PONDKEEPER TO ENJOY

The golden variety of the tench is recommended for the pondkeeper as it is more likely to be seen in the deeper water inhabited by tench than is the normal green fish.

One-time Doctor Fish

A NOTHER pond-dwelling fish popular with aquarists is the golden variety of the common or green tench (*Tinca tinca*). It is long established as a cultivated species, perfectly hardy and suitable for life in the open all the year. The general shape of the golden tench is similar to that of the green tench, thick and sturdy, the very small scales being covered with a liberal coat of mucus. The colour is an 'old gold', the eyes are ruby red, and whilst many fish also show patches of dark muddy brown, those with a clear gold colour are required for showing.

The tench, common or golden, is not prone to diseases. It favours the bottom of a pond as its dwelling place, and can perform useful work in clearing up uneaten food, left by the surface and mid-water swimmers, which might otherwise turn foul. Unless the pond is very clear one will not see much of the fish, but towards evening they become more active, and will now join the others feeding at the surface.

A friend of mine has so tamed a tench that it will take worms or bread from the fingers, and will permit being lifted out of the water in both hands, and continue to feed when returned with no alarm at all.

There are stories in the books that the tench is a 'doctor fish', and that other fishes which are diseased can be healed by contact with the slime on the body of the tench, which is supposed to be
endowed with magical properties. The pike is said to leave tench alone for this reason. These are only stories and can be dismissed as such.

Golden tench are usually offered for sale from 2 to 6 inches in length. The largest I have seen was somewhere over a foot long, and being a thick and stocky fish it probably weighed from 1\(\frac{1}{2}\) to 2 lb. I know of no record weight for the golden tench; the green has made 8\(\frac{1}{2}\) lb. in this country, but if a pondkeeper can grow them up to 9 or 10 inches, he is doing quite well.

As to feeding, earthworms, water life such as bloodworms or tubifex, snails and their spawn, brown bread or prepared commercial pond pelletised foods will suit them well as they are not fussy, and in a large pond will find enough of their own diet anyway.

There is not much knowledge on the breeding of tench for which one can draw, more is the pity. I think that half a dozen tench selected at random would breed in a well-planted pond once they had reached 8 inches or so in length. Sexing of tench is not easy, but the female could be picked by the extra thick rays and general spoon-shaped appearance of the pelvic fins. If fish were to be found spawning in the shallows early one morning in midsummer, the eggs, which will adhere to the plants as do the eggs of other fishes, could be taken out for hatching and rearing the fry in tanks. In this way they would be free from the attention of predators and of their own parents.

**Nets**

*By W. Alexander*

ONE of the most exasperating tasks for the aquarist is to chase an elusive fish around an aquarium for half an hour, before catching it. Most aquarists will have one, or several nets, with which to catch fish, but if before a net is bought it is carefully examined, a lot can be learned about its future usefulness.

- One of the most annoying nets is the type which has so fine a mesh that when it is moved through the water its resistance not only prevents one from going fast enough to catch the fish, but it also stirs up mud and uproots plants. Such a net is a menace.

- Nets made from natural fibre will eventually rot, after being in use for some time. If one owns a net of this type, or of the above-mentioned type, it is better to buy a short length of white nylon net, of a suitable mesh, and to replace the original material. The shape in which to cut the material can be found by carefully cutting the stitches in the original and laying out the old material as a template for the nylon. Stitching done in natural fibre will also eventually rot in any sort of net and it is advisable, if fitting nylon net to a wire frame, to stitch it in place with a white synthetic thread.

- If more than one aquarium is kept, it is a wise measure to keep a separate net for each tank, as an outbreak of disease can easily be spread from one tank to another by an infected net. If only one net is kept, it should be sterilised after each use, but as a net costs so little, it is much less trouble to keep a separate net for each tank.

- Nets can be bought in a variety of shapes and sizes, each appropriate for a given job. It is often useful to use two nets when trying to catch a particular fish, as the chance of catching it is increased. A small round net, which would be useless in catching a fish in a sweet jar, would be useless in a large tank. Nets with a fine mesh may be necessary for catching young fry which would pass through the holes of a net of larger mesh, but in this instance it is better to transfer fry in a large soup spoon or even in a tea cup. Such a method cuts out the chance of damaging the young fish in a net or by removing them entirely from contact with water.

- A fine-meshed net can be used as a rough filter if laid across the mouth of a bucket and dirty aquarium water is siphoned into it, and collected in the bucket, for returning to the tank.

- One last tip for using a fine net. The job of separating and washing brine shrimp for feeding to baby fish is made easy if the bottom and top of an empty beans tin are cut off, using a tin opener, and a piece of nylon net of suitable mesh is stretched over the top and fixed in place with a rubber band. The centre of the net can be depressed a little and the brine shrimp filtered into it. These can be washed under a running tap and fed to the fish on an artist's paint brush. The brine solution can be collected if the tin is placed in a kitchen basin, and the solution can be used for a further hatching. When the tin starts to rust it can be replaced with another one.
THE COLDWATER SCENE

Making Sure of a Spawning

By L. C. BETTS

Before discussing the step by step procedure for hand-spawning goldfish, some indication of the first preparations is necessary.

In terms of apparatus, shallow glass dishes similar to Pyrex pie dishes are necessary. Shallow, say around 2 inches deep, and if circular say 10 to 12 inches in diameter. Glass is best, for eggs in glass dishes can be seen more clearly than in china ones. The dish bottom should be flat and the sides perpendicular. An alternative can be plastic cake containers, which are usually bought in tiers of three.

Easy to hand should be a sterilising medium, and here acriflavine recommends itself. This can be bought from Boots Chemists in tablet form by special order, and half a tablet to 5 gallons of water is adequate strength. Such things as a table of the right height to enable an easy stance to be taken whilst the fish are being handled, with sufficient surface to work the various containers, also comes to mind.

As was stressed in last month’s article, success of the whole operation depends on the correct timing. So far as the males are concerned they should be ready any time between April and August, but the females need to be on the point of delivery, which means the eggs are ready for release and need only a little assistance to be delivered. Left to themselves, the females appear to release a stimulant at this stage which activates the males in the pond.

The manual operation of the female should never at any time be excessive, for if the eggs do not flow freely with the procedure described below it can be assumed that the female is not yet ready. If eggs are produced by forcing them out, it is almost sure that they will be infertile after being brought into contact with sperms. Given a pair of ‘ripe’ fish the use of the operator’s hands and fingers are almost unnecessary; in fact, digital pressure need not be used. For example, if a pair have already started to spawn all that is needed is to lift the fish out gently and place them in the spawning dish so that they are loosely held between the fingers, the tips of which are resting on the bottom of the dish; each fish will then wriggle to free itself and in so doing release the eggs or sperms.

If this does not happen the fish should be placed in the palm of each hand. Have their heads in the direction of your wrists, and the tips of the fingers are gently closed round the sides of the body. The hold is correct when the fourth, third and second fingers are supporting the abdomen of the fish, leaving the thumb and first finger free. It also follows that the tail will be hanging loose and protruding between the thumb and first finger.

Right-handed people will prefer to have the female in the left hand and the male in the right hand. The actual grip is a light one and the pressure of the second, third and fourth fingers will be only sufficient to prevent the fish struggling free. As the shape of the fish is roughly oval, the fingers will naturally adjust the tension to the shape of the body and in practice the procedure is similar to holding an egg.

The stripping action is done by the thumb and forefinger. With the forefinger held still, the thumb is gently massaged forward towards the vent in a stroking movement. A little practice is necessary to get an harmonious amibodexterity. For those who find handling two fish at once a little difficult, results can be obtained by alternating the male and female. Time is important as the active life of a sperm is less than a minute, although its survival period may be much longer. When released, the sperm is charged with energy but, like a battery being short-circuited, the energy dies very rapidly. An adult male goldfish will release several million sperms, each shaped roughly like a tadpole, and fertilisation takes place when the sperm enters the egg. One egg may be surrounded by as many as 10 or 12 sperms but it is the first to penetrate that does the job and the rest die in the attempt. It is easy to see that the less delay, the higher the percentage of fertility.

An interesting point is that the sex of the young is determined by the male parent according to Professor Shetles of Columbia University. He says that the male-determining sperms are round in shape and the female-determining sperms are more elongated. He also says that contrary to popular belief the tail of the...
Queen of the Water Plants

By IRENE BLEHER (Brazil)

Aquarium Madagascar lace plants showing flower buds

Of the nearly 30 types of Aponogeton plants, Aponogeton fenestratis (Poiret) Hooker is the most beautiful. The family of the Aponogeton (Aponogetonaceae) belongs to the order Helobiae, and with them in this are included the closely related families of aquatic plants called the Alismaceae (Echinodorus, Sagittaria, etc.) and the Potamogetonaceae (Elodea, Vallisneria, Ottelia, etc.).

The genus Aponogeton was named in 1720 by the Italian botanist Pontedora, who found a plant known today as Zannichellia near the hot springs of the Roman Aponus and used the name Aponogeton for it (apone, originally a Celtic word meaning water; gein, a Greek word meaning near; hence—near to the water). Although nearly all aquatic botanists believe that Aponogeton is a real underwater plant, it usually lives for several months out of water, like many others of the Helobiae. The specific name fenestratis was later formed from the Latin fenestra (meaning a window). The Madagascar lace plant is called the Gitterpflanze (lattice plant) by German aquarists. Synonyms of Aponogeton fenestratis are Hydrogeton fenestratis and Owenia fenestratis.

The first living specimens of the lace plant were brought by ship in 1855 from Madagascar to Europe. These most beautiful and most delicate of all the aquatic plants did not live longer than a year even in the botanical gardens. Even today it is decried for its early death in the aquarium by aquatic botanists. My father, Adolf Kiel, who had in Frankfurt the largest installation for aquatic plants in the world, was one of the first to explore the secrets of this plant. He made lace plants blossom and grew plants to the age of 10 to 15 years and having 50-60 leaves.

A. Kiel received his first lace plant in 1900 and soon achieved success. He planted it in a mixture of sand, loam and charcoal in old barrels which he shaded from the light. Before the 1914-18 war he had obtained seeds, which in 6 months were seedlings 10-12 cm. (4-5 inches) high. He considered the charcoal to be very important, and he also used rainwater, which he renewed practically every day.

We know today that the lace
plant is specially sensitive to light, algae and stale water. Most suitable for it is filtered rainwater (hardness DH 2-4, pH 6.0-6.5). I do not recommend pond or river water. The water must always be clear, free from mould, and it must be changed every 2 or 3 days. If the water is too old the leaves will be white in colour instead of reddish. Replaced water must be at the same temperature.

Also very important is the position of the plant. Most suitable is a position with light coming only from above, and from a window facing north. The correct subdued lighting can be provided by darkening the panes of the aquarium facing the light with dark green, semi-transparent paper and by covering the water surface with Azolla or some other floating plant to give shade. Either algae-eating fishes should be placed in the tank to protect the leaves from algal growths or else the tank must be kept totally dark for a period of time (this will not harm the lace plants). Temperature should not exceed 72°F (22°C) in summer and can be only 60-65°F (15-18°C) in winter.

In their home on the island of Madagascar the lace plants live in slowly moving, sometimes still, waters on average 50-80 cm. (20-30 inches) deep, mostly in the heavy shadow of the overhanging plants on the water's bank.

**Propagation**

The buds that form on the rhizome and which develop into attached plantlets can be separated with their sections of the rhizome (no shorter than 1 inch) for propagation. According to the thickness of the rhizome, the planting medium should be from 2 to 6 inches deep.

The rhizome is planted in the medium at a depth equal to the thickness of the stem with the bud or 'eye' uppermost.

At first the planting medium is a mixture of 1 part of loam to 7 parts of sand; later 2 parts to 7 parts of sand is used and for large specimens 4-5 parts of loam to 7 parts of sand. The quantity of charcoal in this basic mixture should be one-fifteenth of the total volume (animal charcoal is recommended). To increase the amount of loam as the plant grows, place 1-inch balls of
Two 'ears' of seeds of the lace plant seen against a large leaf of the plant. The delicate net appearance of the leaf, causing the plant to be called the lattice plant in German, is shown particularly well in this photograph.

loom, dried hard in the sun, at least 1 inch deep in the soil close to the rhizome.

The lace plant blossoms twice a year. The blooms (4 inch long) are milky white and have a pleasant smell. The fruit-bearing ears begin to sink below the surface of the water. When they are fully mature, the fruits release themselves from the ear, like other types of Apomnogoton, float for 1–2 days on the surface of the water, then sink to the bottom. Never keep the seeds dry. Direct rays from the sun will kill the seedlings immediately and cause the older plants to die.

Making Sure of a Spawning

*Continued from page 57*

sperm does not drop off when entry into the egg is made.

The actual stripping procedure follows a simple routine. The aim should be to release about 20 eggs at a time, and to endeavour by manipulation of the fish's tail, to disperse the eggs in the dish. As the eggs have an adhesive property, they will stick to the first solid object they come to and until experience has been gained in dispersing them the tendency will be for them to stick together in batches. My experience is that eggs which are touching one another fuse together and fail to hatch out.

The milt of the male can be seen as a tiny white cloud in the water and once the water in the dish has a pale milky appearance it can be assumed it is charged with sperm.

Do not exhaust the fish unnecessarily. Rest the parents every hundred eggs or so by placing them in a tank of fresh water which is kept close handy. Some difficulty may be felt in handling fish, but apart from a few scales which come off no harm need be done. The protective skin is very tough and provided that a mild bath of acriflavine is given when the job is completed, the pair should be none the worse for the experience.

We can now assume that one or more glass dishes with eggs stuck within them are ready for the next step. This consists of washing the eggs under a tap. Do not be afraid of letting the water splash against the eggs, as they will not come adrift. Next cover the eggs with the mild solution of acriflavine, already described, for 5 minutes and then wash again under the tap.

All that remains now is to place the dishes in the hatching tank, either on the tank floor or better still on upturned jam jars. The latter alternative permits heating elements to be placed under the dishes and also to raise the eggs into the upper layers of the water, which is better for the alevins. A portable biological filter can be so installed to give a continuous flow of water over the eggs, for clean well-aerated water is a vital ingredient during the hatching stage. The flow also decreases debris settling on the eggs, for this again is not a good thing.
WHEN I rearranged my principal tanks last year one of the consequences was that the main one was well above eye level when viewed from an easy chair, and this certainly has its advantages. All will agree that a tank looks a lot better with floating plants, and as you can rarely see them from above it is as well to make the most of their undersides. The attractions of riccia are well known, but there are many others, including even the humble duckweed, which add that finishing touch which is so often lacking. I particularly like the delicate rootlets of water lettuce, and the silvery undersides of salvinia, with floating fern providing greater variety of form with the tracery of their beautiful surface leaves.

Most fishes will poke around in floating foliage at one time or another, but I particularly like those surface-hugging varieties which can generally be found where the water is warmest. Perhaps they know a thing or two. The halfbeaks seldom leave this area, and many of the pencilfish spend a lot of their day in the upper reaches, but it is the hatchet fish which most readily come to mind in this context. I first came across these at one of the first exhibitions after the end of World War 2; they occupied an entire tank and were a memorable sight, even seen against the more exotic attractions from all other quarters of the hall. Their fragile, butterfly-like shape and most delicate of markings were presumably attended by the greatest possible difficulties in management and breeding, and like many others I was put off until much more recent years, when both financial and practical considerations considerably altered the complexion of things.

I cannot recall reading any accounts of the breeding of hatchet fish in captivity, but it has been suggested that the floating plants, given all the other right conditions, have their part to play. It seems likely that the Hatchets will remain in the 'next-to-impossible' breeding class until a great deal more research has been given to them. Such seems unlikely, presumably because they have come to be regarded as a 'novelty', the demand for which can well be met by such importations as there are. It still seems a pity that so many aquarists are deterred by their reputation for being delicate and difficult to feed, as they strike me as being not much less reliable than the average run of community fishes, given a satisfactory quarantine and settling-in period. They seem to accept flake food quite readily, likewise chopped tubifex and white worm 'swirled' around in the top 2 inches of the aquarium water. In the summer some Daphnia can be netted and dropped on the surface, and great larvae constitute a special treat. It is likely that other small insects (why not try greenfly?) might also prove attractive, and I shall be looking into such possibilities this year when there are more on the wing than at present.

An interesting thing seems to be that newly imported fish seem to swim much closer to the water surface than do older ones. I wonder whether the lack of obvious 'live' attractions which wriggle and hop around the surface of the water in Nature causes the fish to drop lower in search of food, or whether the restrictions within the normal tank on the fish's liking for aerial flights cause it to become lazy in some way. Or has the nature of the water anything to do with it?

The species most likely to be available in the shops are Carnegiea striata and Gasteropelecus levis, commonly known as the marbled and the silver hatchet respectively. There are others, too, but less well-distributed, but it is always worth keeping an eye open for them. I was fortunate enough to secure some Carnegiea marthae recently, which look very like the striata, but are plainer and more silvery on the body and seem to me to be even deeper bellied, if this is possible.

What appeared to be a close relation of all these appeared in the tanks of a local dealer last week, but both he and I were fooled! The subject was a gloriously silvery fish with colouring reminiscent of the moonlight gourami and the danio, shaped rather like the dreamor. Longish fins and lively movement in both mid- and upper water suggested that here was another hatchet fish, and so it was, but it was from Malaysia, not the Amazon, and it turned out to be a cyprinid as well, not a characin, as one might well have believed. This was the first time I had come across the Indian hatchet fish (Labuca labuca), and I am now looking forward to getting to know it better. Mine are in quarantine, where fish seldom look their best, but first indications are that they should really shine in the right lighting conditions and in a large tank. They are terribly nervous and seem to have gone on a hunger strike, but as they are wild fish this is not particularly surprising.

They complete a quartet of surface dwellers which ought to improve any general collection, and if the literature on the subject is anything to go by, the Labuca might be breedable. What if it gave some clue to the habits of the others? Most unlikely, but nothing attempted....

It is always interesting to get letters with foreign stamps on them, and to be reminded how far afield PFM is read and discussed. Mr C. F. Reichard writes from Puerto Rico on 26th December in response to my notes last year about exploding light bulbs. He reports having experienced no trouble of any sort in this respect, possibly because he has put plastic strips below the bulb
sockets (and right on to the bulb if necessary) so that any water bubbling from aerators or filters or dripping from the hood will be screened away by the plastic from either the bulbs or their holders. He introduced this method because he had encountered short-circuit trouble from his lights, and seems very simply to have killed another two birds with one stone. I have written to this correspondent to thank him for his advice and, since he speaks with a number of years' experience behind him, to suggest that he tells us a bit more about what goes on in his part of the world. We take conditions in this country very much for granted, and I am most interested to know what is in vogue in other regions.

I got the impression recently that, whilst in the Far East there is every sort of fish available, there is a paucity of plants (or is it a lack of interest in them?). I should like to hear from any of our Far East readers as to what they make of the situation. It is also suggested that in the Americas there is less ability than there should be in the furnishing of aquaria with plant life. I very much doubt whether this is so from some of the photographs I have seen of absolutely enchanting transatlantic aquaria, but those plastic plants can fool all of us some of the time! I don't think overseas readers quite realise how interesting their experiences can be to those elsewhere. I am sure that every overseas reader now knows all about the U.K.'s troubles with heaters and power cuts, but I am less sure that U.K. readers know about the difficulties in the Far East and elsewhere as regards cooling aquaria to the cooler limits favoured by certain popular varieties (e.g. White Clouds) and similar problems. I hope it might be possible in the course of time for the Editor to publish details of overseas visitors to this country who would like to visit some of us, whilst passing through, to partake of a little hospitality, and to have a gossip about the hobby in the course of it.

What's New?

For the Tank-maker

THE Dow Corning Silicone Rubber Aquarium Sealer made specifically for use in aquaria (previously only available in the United States and about which there has been correspondence in PFM, February and April, 1968) is now being distributed in this country by South Coast Aquatic Nurseries. The silicone rubber sealant is available in black or colourless form. It will not shrink or harden (and to prove their point the manufacturers have attached to each attractive card pack a small blob of the sealant to demonstrate the consistency maintained by the sealant after contact with the air). It is guaranteed not to dry out, crack or crumble for 10 years if used within one year of purchase. It is furthermore usable in salt water as well as freshwater aquaria.

The blister pack contains a 3 oz. tube of the sealer (and a separate applicator nozzle that can be cut to give the exact width of sealer strip required). Full instructions for use are given on the back of the card. The price of the pack is 19s.

Power Filters and Pond Pumps

This pine-framed aquarium (plastic-lined) and water garden was used in the window of Rentokil's Advice Centre in London to demonstrate the effectiveness of the firm's water-repellent primers and finishes for treatment of timber exposed to moisture.

This new Eheim filter medium, this model is priced at £29.12.7 (fresh water) and £30.12.5 (sea water). The Eheim 586 Power Master has a capacity for dealing each hour with twice this amount of water. Suitable for large aquaria and garden ponds, the filter case is 23 inches tall and 12 inches wide, and the unit is powered by the 581 Eheim pump (available without filter medium, £59.1.2).

Two new Eheim pumps that are oil-cooled and can be used fully submerged in aquarium or pond have outputs of 110 gallons and 220 gallons/hour (the 491 costs £20.11.0 and the 591 £23.5.0). All models are distributed by South Coast Aquatic Nurseries.
PRACTICAL
JOTTINGS

By F. N. GHADIALLY,
M.D., Ph.D., D.Sc.

 THERE are two schools of thought about cleaning out aquarium tanks. Most aquarists, including myself, believe that as a rule rinsing out with water is enough, and antiseptics, chemicals, soaps etc. are rarely necessary and can be dangerous. Others, however, freely use common salt, copper sulphate, potassium permanganate, Lysol, Dettol and other such substances, to disinfect their tanks.

There are occasions when something more than water and elbow grease is necessary for tank cleaning. For instance, when a scrupulously clean tank, free of snails, snails’ eggs, Hydra and planarians is required for spawning, or when one would like to clean out a tank after an outbreak of some disease to make certain that all the parasites or bacteria are well and truly dead.

Disinfection of Tanks

A host of chemicals exist which will kill off all the various creatures mentioned, but the difficulty arises in getting rid of these chemicals from the tank so that not the slightest trace is left behind to harm the fish. This, in my opinion, rules out persistent antiseptics and copper sulphate. I once cleaned out a tank with Lysol but I could smell it after I had rinsed it and filled and emptied it over 50 times.

The most interesting experience I had was with copper sulphate. I was treating a fish infected with velvet disease when I accidentally knocked the bottle over and about 200 to 300 ml. of a saturated solution of copper sulphate fell into the 18 in. by 10 in. by 10 in. tank. I rescued the fish at once from this grossly overdosed water (many thousand times the required amount), but I did not bother to empty the tank; in fact I thought it would be a good idea to let it stand in order to kill all the parasites.

Now copper sulphate is a deadly poison, so after about a week when I cleaned the tank I took great care to wash it thoroughly. I even stood it under running tap water for a few hours to make certain that all the copper sulphate was washed away.

The aquarium was then duly set up for spawning and a pair of niger barbs introduced. They seemed happy enough when first put in but were found dead the next morning. To cut a long story short, for about 8 months I struggled to make that tank safe for fish; hours under the tap, weeks of soaking and filling and emptying but no fish could live in it for more than a few days. Copper salts had no doubt been deposited in the glazing compound, so in the end I had to take the tank to pieces and reglaze it to make it habitable for fish.

The substance I use for cleaning tanks is 0.88 sp. gr. ammonia. This is a very strong solution and it must be handled with care and kept out of the reach of children and animals. Never bring your nose or eyes close to a bottle of strong ammonia or serious injury may result. Four or five spoonfuls of this ammonia added to a 18 in. by 10 in. by 10 in. tank is more than adequate. The dose is not critical, as the ammonia is added to a tank filled with water containing no fish or plants. Allow the mixture to stand for a few hours and then empty the tank. Fill and empty the tank five times with tap water and it is then safe for fish.

This is the most efficient and safest way of cleaning an aquarium. The ammonia is powerful enough to kill everything undesirable from the aquarist’s point of view and it is very soluble, so it is easily and quickly removed by the changes of the water. Minute traces are harmless to fish and in fact will assist plant growth. Ordinary mature aquarium water contains traces of ammonia, in any case, but larger doses can be toxic.

Infusoria for Fry

One of the commonest tales of woe that is heard in aquatic circles is how a superb spawning of hundreds of fry vanished mysteriously within a few days of becoming free-swimming. I have investigated scores of cases of this nature and have come to the conclusion that failure to appreciate what is and what is not a ‘good’ Infusoria culture accounts for a majority of these episodes. Any novice who intends to go in for breeding fish seriously would be well advised to lay aside all fish breeding for some time and study the cultivation of Infusoria.

There are numerous ways of making first-class cultures and most of us have our pet methods. However, what is important is not the method employed but the results obtained. You must somehow or other develop a technique which produces a culture containing thousands of organisms in, say, a spoonful or egg-cupful of culture and yet the culture should be quite odorless and clear. No strong, unpleasant smell should accompany such a culture and at a casual glance you might mistake it for a quantity of water from a fairly well kept aquarium. By now some of you may feel that this is a slight exaggera-

Continued on page 73.
A Plea for Better Planted Ponds

By D. B. McINERNY

THE popularity of garden pools has increased tremendously in recent years. This is not surprising as a well-stocked and planted pool can become the centre of attraction in most gardens—a pool should be not only attractive but a pleasant place by which to sit.

Many pools have a fountain operating in them, and although this sounds pleasant, the spray falling on to the water surface tends to disturb water lily blooms, and also makes it more difficult to see the fish swimming below. A waterfall dropping from two or three levels, but finally entering the pool very gently, is to be preferred; it provides the sound of splashing water, circu-
lation and oxygenation, does not disturb the surface and the fish are more clearly seen; likewise water lily blooms are not continually bespattered and ruined.

Most modern pools are either fibre-glass moulds let into the ground or excavations lined with polythene sheeting or the longer-lasting and thicker Plastelene or Juralene. In the moulded fibre-glass pools some have shallow ledges on which to stand pots containing marginal plants, but in my opinion not nearly enough space for a good array of these. With the lined pools far too few pondmakers leave any shallow surround for marginals.

For those about to build a pool allow me to make a plea for them to make a shallow surround for the marginal plants, for these will greatly enhance the beauty and naturalness of the finished pool. For those who have already sunk a pool without these provisions, a trough can be dug all round the pool and either concreted or lined with Juralene to make it water-proof.

My own pool is made of reinforced concrete and as well as a sectional view a plan of the surrounding trough is given here. Note that dividing walls have been built roughly 1 ft. apart throughout the trough; this is because most marginals are easy and quick growers and they will send out runners and roots in all directions. It will not be long before the separate groups are hopelessly intermingled and inseparable unless as in my garden each is confined to its own pocket and any runners crossing the dividing walls can be seen and are easily chopped off, preventing integration.

In the bottom of my pool I have old concrete kerb stones dividing the area into squares of 2 ft. by 2 ft. The kerb stones stand on edge, making each pocket roughly 9 in. deep. The pocket is filled with good loam, and water lilies and other submerged aquatic plants are set each in their own square. The pockets for the marginals are approximately 8 in. deep and these again are filled with good loam, above which there is roughly 4 in. of water.

Below I list only the hardy plants that will withstand our winter conditions; all bear coloured flowers, or quaint or colourful foliage, are easy to grow under 4 in. of water, and most are available from now until June from well-stocked aquatic nurseries.

Fairly Tall Growers

Acorus calamus variegatus: height 2–3 ft.

Although the plant does bear a cone of greenish flowers, its main attraction is the large sword-shaped leaves, longitudinally bi-coloured cream and green. It grows from a rhizome which should be planted horizontally in the soil.

Alisma plantago-aquatica (water plantain): height 2–3 ft.

This is a common plant obtainable from many river banks, but somewhat weedy, so care must be taken that it does not overtake everything else. The long-stalked leaves are large and ribbed; above these it throws flowering shoots, which again branch and bear rose-coloured flowers. After flowering cut off the heads, or seeds may fall and sprout where not required.

Butomus umbellatus (flowering rush): height 3–4 ft.

Certainly one of the loveliest of the British aquatic plants. The spear-shaped leaves are bronze-purple in colour, but turn green on maturity. Long stalks rise upward and the tip forks like the supporting struts of

How to confine the marginals

A sectional view (left) and plan (right) of the arrangement of the author's pond described above (drawings not to scale). A surrounding trough in the concrete provides the rooting area for the marginal plants and both this area and the compost on the pond bottom are sub-divided by rectangular stones to make compartments that limit the spread of plant roots and runners beyond the region allotted to them.
an umbrella forming umbels of rosy pink flowers. This is a 'must' for any pool.

_Houttuynia cordata_: height 1-2 ft.

The plant bears spade-shaped blueish green leaves with reddish stems. Four white bracts bear a central spike of tiny white flowers.

_Iris kaempferi_: height 2-3 ft.

Often known as the clematis-flower irises, these are perhaps the most beautiful of all the waterside plants. Flowers in a range of colours, white, yellow, blue, purple, violet and red, heavily marked with large blotches or veins of various colours, each bloom often being 4 or 5 in. across. Even the flat, green, sword-shaped leaves have a pleasant cooling look, but when in June and July the gorgeous flowers appear the effect can be breathtaking—they like a rich soil free of chalk and though hardly enough to withstand our winter they will not remain under 4 in. of water all the year round. They must be lifted, or planted so that the rhizome is only damp during the colder months. They will often have a second blooming in the autumn.

_Aponogeton distachyum (water hawthorn)_

Here we have one of the loveliest of all aquatic plants. They can be planted in pots and set at a depth of 18 in. to 2 ft. or planted in shallow water as a marginal. Long stalks grow to the water surface when the plant is submerged. As a marginal the stems will spread horizontally over the water surface. The leaves are flat, elongated ovals, mostly green, but some have dark brown to black blotches on them. These lie flat on the water surface. The flowers are in the form of a crescent or Y with the two tips pointing upwards. They are white with jet black anthers, feathery in appearance, borne profusely and very sweet-scented, resembling the hawthorn—hence the common name.

The plant can, and often does, bloom for 9 months of the year. Large roots can be divided to make more plants, or they will frequently seed themselves. A really good clump at the water's edge or in the centre of the pool can outclass many of the best water lilies. It is certainly a plant I recommend for any medium sized pool.

_Iris laevigata_: height 2 ft.

This is a beautiful species of iris that will grow permanently, summer or winter, under 3-4 in. of water, though it will also do well in damp soil. The foliage is flat and green and sword-shaped; the flower stems slightly top the foliage and produce blue flowers with a golden spot on each petal. There are various colour varieties of this water 'flag'. Alba is white, atrorupures is violet, rose queen is a rosy mauve; finally, variegata has green and white striped foliage and bears pale blue flowers; all will bloom in mid-summer and often have a second flowering in the autumn.

**Plants of Medium Height**

_Acorus gramineus_: height 8-12 in.

A pretty little rush that will grow in shallow water, bearing variegated green and cream leaves.

_Damasonium stellatum_: height 4-8 in.

Though a British plant, this is rare; the leaves are borne on long stalks, many of which float on the water surface, but some will stand more upright. The plant bears white flowers and these have a yellow spot at the base of each petal. In the autumn, seed pods appear, each in a separate six-pointed star form. These stars may float across the pond, but some sink near the parent plant. Any which root can be gathered and planted to make a nice clump of plants. There is a ready sale for any left over.

_Sagittaria sagittifolia var. japonica_: height 15-18 in.

Bears long broad pointed leaves standing well erect. The flowers are like large white buttercups. The variety flore pleno bears double flowers and when in a position to its liking is a truly magnificent plant, blooming profusely with large globular flowers like small snowballs. One of the best marginals for medium-sized pools.

_Junco effusus var. spiralis_: height 18 in.

This is a round-quilled rush for those who like the fantastic. For unlike all the other straight rushes these quills grow in a corkscrew manner. They are tough and strong but may need occasional trimming to prevent them getting over-straggly.

**Shorter Plants for Smaller Pools**

_Acorus gramineus var. pusillus_

A tiny dwarf rush that will grow in shallow water, sending up fans of narrow flat sword-shaped leaves only a few inches high.

_Calla palustris (bog arum)_

This plant will send out long creeping thick round stems producing heart-shaped leaves, bright green in colour, smooth, shiny and well veined. It bears white flowers similar to an arum lily, with a central spadex. In autumn the small flowers on the spadex have turned to bright red seeds. To prevent their spreading too far, the creeping stems can be chopped well back at the end of the season.

_Caltha palustris (marsh marigold)_: height 9-15 in.

Here is one of the loveliest of marginal plants. It will also grow in damp soil. It is compact and busy, growing almost round serrated leaves and a profusion of bright golden buttercup-like flowers. It is the herald of spring and probably the first marginal to flower in the pool. The variety flore-pleno is probably the most handsome—it bears a profusion of round, double, bright gold flowers. Another variety, alba, is not quite so strong, grows only 9-10 in. high and bears single white flowers.

_Elisma natans_

A delightful little marginal plant bearing tiny oval leaves 1 in. in length which float flat on the water surface. It blooms with a profusion of small white buttercup-like flowers. One plant will soon spread into a mat 1 ft. across. Dainty, but hardy.

_A further selection of recommended pond plants will be given next month._
PETER UNWIN'S 
Notebook

'GuppiES SURVIVE IN SEA-WATER?' A question often asked and not only by the members of the I.M.S.S. An article touching on the subject appeared in the July, 1967 issue of P.F.M under the title 'East is East—And Salt Is Fresh', but as this brought in other species I much prefer the explanation given by Albert J. Klee, better known as 'Mr Killy'.

His researches showed that guppies transferred from fresh water to a tank containing half sea water died with a mortality rate of 7%. When the salt content was increased to 75% all the fish transferred died over the next 3 days.

Just in case my reader assumes that guppies and salt don't mix let me hasten to assure that when the fish were transferred into increasingly higher salt concentrations, with a resting period of one week in between, no fish died. The increased concentrations were 25, 50, 75% and finally pure sea water.

It only goes to prove what breeders have been saying for years, that this little fish is tougher than some folk care to admit. After experiencing over a century of man's interference it had to be!

Sometimes, picking the correct pair of fish to sire future broods is likened to the punter sticking his pin in the form sheet, but the 'chances' or odds can be shortened.

For example, we have a male and a female guppy, both visibly excellent, but the latter has a slight fault such as a slight deformity or wrong standard finnage shape in just the dorsal fin; the other outstanding factors outweigh this and suggest her use as a breeder.

We hope the superiority of the male will overcome the slight female fault. Instead of being outweighed by his excellence, however, it could well be that the reverse is the case; could all their brood display a foreshortening of the dorsal fin?

In breeding good guppies we must be prepared for a long journey, every step of the way dealing with improving the odd feature, the establishment of one factor before we approach another.

These factors form three major groups: (a) finnage shape; (b) colour; (c) body features or markings. Try to develop the required features in never more than two of these factors at a time.

Try to find out as much as you can about the ancestry of the fish you propose to use. Remember, there is a vast difference as regards breeding capacity between the product of a chance mating and the fry produced from inbreeding for fixation of a desirable trait. The former may never breed anything but rubbish, whereas the latter can be relied upon to produce a goodly proportion of the brood either displaying or carrying (phenotype and genotype) the necessary factors.

The male guppy is a persistent chaser of the female, his antics put those of Don Juan and Cyrano de Bergerac in the category of amateur.

This persistent worrying of the female guppy can often cause her to make sudden movements to avoid his attentions and often to even jump clear out of the aquarium.

To stop this, always ensure you have twice as many females in the aquarium as males, ensuring that one of each pair, at least, is free from the constant attention of her counterpart.

BILl ARMITAGE'S 
Comment

It is very interesting to note that the dangers of using hormones in the breeding of guppies was the subject of much discussion at the 1968 F.G.A Judges Conference held in Birmingham recently.

The matter arose in connection with a proposal for the adoption of a colour class for females, and the possible use of hormone treatment to bring out the colour had to be considered.

The dangers to the health of judges and show staff who might have to handle jars containing hormone-treated water was strongly stressed. Well over a year ago I commented myself on the dangers of the use of these drugs to show officials. It would seem only commonsense to prohibit the use of products such as these until much more is known about them, and one would imagine that the majority of guppy breeders

Continued on page 72
The female pencil fish, seen to be distended with eggs, examines and appears to test, by pressure of her body, suitable sites for spawning.
Pencil Fish Breeding in Pictures

Nannostomus (Poecilobrycon) eques

For all lovers of decorative tropicaIs who prefer a small or smallish aquarium with peaceful but extremely interesting fishes, the tube-mouthed pencil fish or ‘oblique swimmer’ is the best to recommend. The second name is used because the fish swims at an angle with the head held upwards.

N. eques belongs to the family Hemiodontidae and attains a size of 2½ in. It was first imported to us in Czechoslovakia in the year 1955, from the quiet waters of the tributaries of the middle Amazon and Rio Negro. The body of this species is more robust than that of the related pencil fishes, N. unifasciatus and N. ocellatus. The adipose fin is extremely small or is missing altogether.

I will not describe the colours because it is difficult to imagine the true shades from the descriptive word alone, but the pictures show how very conspicuous the white flanks are. The mouth of the fish is very tiny and pointed. The male is slimmer than the female and his reddish hue appears more intense. The caudal fin, which is rounded at the ends, is black with a white border. The pelvic fins have white tips. The female is fuller in the belly and not as intensely coloured.

As has already been said, a small to medium-sized tank is sufficient for this fish, planted to one’s liking, with floating plants included. The temperature should be 72°F (22°C), and the water should not

In this picture and the one opposite the close attendance by the male on the female that has shown her readiness to spawn is demonstrated. The typical head up attitude is shown by the male pencil fish on the right.
tion; however, I can assure you that it is not. There is no secret about how a healthy culture is prepared and the process can be quite easily explained on theoretical grounds.

The basis of all Infusoria cultures is some decaying organic matter placed in a quantity of water; up to a point, the nature of this decaying organic matter is immaterial. Anything seems to work and almost everything has been tried by aquarists. Arranged roughly in order of preference, we have lettuce leaves, hay, flour, potato peelings, earthworms and pieces of fish. I have tried most of the above-mentioned and many others and have now standardised my technique by using lettuce leaves. No doubt others have worked out an equally satisfactory method with something else.

Whatever decaying organic matter is employed the first thing that happens in the culture is that a large number of bacteria (quite harmless to fishes or man) begin to feed and multiply on this organic matter. If the water is examined now it will be observed that it is quite turbid and somewhat yellowish in colour and may have a faint 'organic' smell or a foul smell resembling rotted eggs. The type of smell depends upon the type of bacteria thriving in the culture.

If you set up your culture in a tall narrow container and it is overloaded with organic material the conditions will be right for anaerobic bacteria (bacteria which do not need free oxygen for growth) to develop, whilst if you set up the culture in a shallow container with a relatively large surface aerobic bacteria will thrive. As many of the anaerobic bacteria produce a gas called hydrogen sulphide (the same one that issues from rotten eggs) it is easy to see why these cultures have a foul smell. Such conditions are unfavourable to the production of a rich Infusoria culture, for Infusoria need oxygen, as well as bacteria which they need as food.

Hence for my culture I use a shallow enamel or polythene bowl about 18 inches in diameter, 6 inches high. Details of the procedure will be given in Practical Jottings next month.

---

**BOOK Review**

TROPICAL FISHES OF THE GREAT BARRIER REEF by Tom C. Marshall. 239 pages, 64 plates, 72 colour plates. Angus & Robertson, London. 75s.

TOM Marshall was Government ichthyologist with the Department of Harbours and Marine, Queensland, from 1943 to 1962, when he retired. His first work, for which his position had given him unique knowledge, was the book FISHES OF THE GREAT BARRIER REEF, published in 1942. This was a comprehensive survey of all the species to be found there, together with much scientific data on each. This, his second book, is based on the same lines but with a reduced scientific text and an enlargement of the more interesting aspects of the overall reef picture. It contains 147 pages of illustration (80 in full colour) in the centre of the book preceded by an excellent introduction by Gilbert Whiteley. There are a staggering 497 kinds of fishes described, the written descriptions following the illustrations, and all are easily cross-referenced—description to picture.

One small point of conflict may be noted in the fact that if all the introductory photographs were taken of Barrier Reef species, then at least one Amphiprion is missing from the text. As an illustrated guide to the identification of the tropical fishes of the Great Barrier Reef it would take a great deal to excel. A thoroughly readable and worthwhile reference book.

GERALD JENNINGS

GARDEN PONDS by Arthur Boarder. 93 pages, 7 pages of line drawings. Foyle's Handbook Series. 55. 6d.

GARDEN-pond making is now no longer the chore that once it was when the pondmaker had to start from the basic elements of cement, sand and gravel and progress with much sweat from there. Modern materials such as fibre-glass, plastic sheeting and new types of cement have taken a lot of the hard work out of pond-building and even the faint-hearted may now be tempted to dig the hole that is, they hope, to become the latest delight in the garden. As a result, to prevent the country becoming littered with a lot of sad little puddles there is a real need for sound instruction in the art of pondmaking and maintenance for the new pond owner. This Mr Arthur Boarder supplies in his GARDEN PONDS—a recent addition to the excellent Foyle's Handbook series. Attractively presented as this series is, between hard covers and with a useful index, the ten chapters deal with building, filling, planting and stocking the pond, maintenance during summer and winter, fish breeding and pond pests. The author speaks from the knowledge gained from many years of practical fish-keeping and this he is able to impart in such a clear, down-to-earth way that the reader is soon convinced of the possibility of joining the ranks of successful water gardeners. Seven pages of line drawings illustrate the text and a coloured cover gives some idea of the glories to be aimed at. An excellent guide for any beginner who plans to turn that dismal stretch of the garden into a water wonderland this year.


If I were asked to choose three books for an aquarist's basic library, one I would certainly include is van Duijn's book on fish diseases. The first edition was
published in 1956, but since then more information and many new treatments have become available. As a consequence, another 125 pages and several more illustrations have been added in the second edition. This book has just about everything on fish diseases that the average aquarist, and for that matter many specialists, might need to know.

Striking a fair balance between coldwater and tropical diseases, van Duijn seems to have covered the fish thoroughly from nose to tail. Such is the scope of the book, that the author devotes individual chapters to skin parasites, gill diseases, eye diseases, internal diseases, protozoan infections, bacterial and viral infections, and tumours.

In dealing with individual diseases, he gives detailed descriptions, usually fully illustrated, followed by all the known treatments and their effectiveness. The 'ich' takes pride of place in the book, being the subject of 15 pages, seven illustrations and nine different treatments. If one is not an expert on white spot after reading all that, one might just as well pack in fishkeeping! Apart from the 'ich', all the familiar diseases are dealt with in turn. In addition, many unfamiliar ones are included, some of which are specific to individual fish species.

I find the final chapter extremely useful. It runs through the shelves of a fully stocked medicine chest, giving the uses to which each substance can be put and the recommended doses. All in all, this comprehensive account of fish ailments cannot fail to be a valuable addition to the library of those unfortunate aquarists among us whose fish are prone to catching all sorts of ills.

DAVID HOLLAND

By GERALD JENNINGS
(International Marine Study Society)

Last month I covered a number of remedies that could be used for treating Oodinium in marine fishes. This month the disease under fire is 'white spot'. Marine white spot (for which the velvet parasite mentioned last month is often responsible for a false identification) is rather more serious than its freshwater cousin, frequently seeming to show a much shorter life cycle.

Fortunately, even if an incorrect identification is made of 'that spot' on your fish, most of the remedies quoted last month will be found effective against Ickthyophthirius and Oodinium—namely, copper sulphate, quinine and methylene blue. The last-named, however, has to be administered in much stronger concentrations until the water is an inky blue-black.

Recent developments in the combating of marine diseases have produced two new drugs, one of which is not generally obtainable yet in the U.K. but is an effective general bactericide, the other of which has been tested and approved by the International Marine Study Society, is being marketed by them and has the major advantage that it is harmless to invertebrates, whereas the commonly used copper sulphate is not.

• NOW for a brighter topic—breeding. For many years now we have read reports of the successful spawning, though not so successful raising, of marine fishes, emanating from the United States and from Germany. Recently Mr Lee Chin Eng of Indonesia has claimed success with Premnas biaculeatus and other species. The only report of a spawning in the U.K. was reported in FFM (February, 1957) last year.

One difficulty seems to be the refusal of the young (except under the 'natural method', where it does not apply) to accept any dried food, or even newly hatched brine shrimp, which seems too large.

Now, however, it seems that German aquarists have triumphed again and have found a successful formula for feeding fry. You should mix up a broth containing the following, we are told: sea water, mussel flesh, egg-yolk, a little blood, fish and bone meal, dried shrimps, grated silkworm pupae, dried cod-liver oil, germinating wheat, fresh oatmeal, vitamins A, B1, B2, B12, D and T, nicotinamide and chlorophyll, sieve and store in a refrigerator until used. Personally, I think it sounds a most repugnant substance to manufacture (especially the silkworm part) but, if it works, anything for our fishy friends (including the refrigerator!).

• THE tropical wrasses are one of the most diversely coloured families of marine fishes and their diversity extends also to their range of diet. Wrasses are very hardy community inhabitants, eating a wide range of live and dried foods. Probably the most well-known species are Coris gymnocris and Labroides dimidiatus, or the neon wrasse (covered in last month's FFM). Coris gymnocris is a striking fish in its younger stage, being a reddish colour with several white vertical bars crossing the body—but lo and behold, like many marines, the adult is totally different from the youngster, both in body shape and coloration, and one would hardly recognise them as being the same species.
This type of change can also be seen in the genus of angelfishes, *Angelichthys*, from Florida and the West Indies, and in these fishes the change is far more noticeable. What, I am led to wonder, other marines change so much? Could it be that this is more common than has previously been thought? If this type of colour pattern change occurs with butterfly fishes it may account for at least a few of the many, many species that can be seen.

Transatlantic TOPICS

Less than 3 years after that famous discovery of Columbus, John Cabot, a Genoese explorer, set sail from Bristol, England, and landed on Cape Florida, later visiting the string of islands that jut out from the Cape into the Gulf of Mexico and the Atlantic Ocean. To-day, along with the luxurious Key Biscayne (the home of millionaires), this southeastern portion of the United States is still attracting the visitors.

Within easy reach of Miami lies Cape Florida State Park, a fisherman’s paradise where tarpon, snook, snapper and grouper gather to provide the hunter with his thrills. But the aquarist looking for less energetic sport can do no better than to take a trip in one of the glass-bottom boats and gaze at no less than 40 of the 52 colourfult species of coral to be found in the Atlantic reef system.

This underwater reef is the home and spawning ground for thousands of rainbow tropical fishes, turtles and other sea life.

Perhaps the greatest surprise to the sight-seer is the 9-foot-high, 4,000-ton statue cast in bronze—Christ of the Deep, placed on the reef by the Underwater Society of America as a symbol of peace.

As you gaze down through the crystal-clear water you can see this huge figure with arms uplifted, symbolising the words uttered at the dedication ceremony: ‘with His liberal gesture of invitation, He will welcome everybody; all who lived for the sea and who, in the same sea they so dearly loved, found their eternal peace.’

The St. Lawrence Seaway is the waterway that allows ships to sail direct from the Atlantic into the Great Lake systems of the North American continent, but the seaway also opened up a route for many creatures of the deep, least of which was a fish called the alewife (Pomolobus pseudo-harengus).

This has an average life of just 3 years, and an estimated 100 billion of alewife corpses are found floating in Lake Michigan alone and have caused such a pollution problem for the City of Chicago that the U.S. Secretary of the Interior, Mr L. Udall, has formed a Federal Task Force to study the problem.

Suggests so far for the elimination of the alewifes have included seeding the Lake with predatory fish such as Lake trout and Coho salmon; one ingenious inventor has put forward plans for a floating ‘vacuum cleaner’ boat—such orthodox methods as netting the fish are useless because of the numbers involved.

No one will deny that if we are to attract more to our meetings and shows then we must consider amongst the many attractions that of better prizes, and that goes hand in hand with increased income to pay for them. Recent figures taken from American Show Schedules give the cost of entering a breeder’s team of fish (four over there) at 3 dollars per entry, roughly one guinea; individual entries are 1 dollar (about 8s). Compared with these our fees seem mere triffles. Granted, wages in the U.S. are higher, and I am not suggesting we raise ours (fees, not wages) to quite their level, but it is about time we gave the matter some thought. What do you say?

All aquarists should be great mathematicians. For years we have been adding things to our tank water and subtracting things from our aquarium in an attempt to provide a more suitable environment for our fish. About the results of these actions we are equally divided!

After 6 year’s research and experimentation, a new product to treat aquarium water has been marketed under the name of Picon. When this compound is placed in the outside aquarium filter it is said to keep the water between pH 6·5 and 6·8, in the average tank; it removes the deadly build up of ammonia and other harmful waste products of the fishes and organic substances resulting from overfeeding. The makers explain that Picon is not a water softener, a demineraliser or a water conditioner, but it is harmless to fishes and plants and is insoluble in water.

Prolonged use is said to improve the colours of the fishes and during their experiments the manufacturers managed to breed fish that had not bred before. If you want more information about this product then please get in touch with the manufacturer: Pisces Chemical Corp., P.O. Box 7316, Ludlam Branch, Miami, Florida, U.S.A.

‘If you come to San Francisco, be sure to wear some flowers in your hair’. So went the words of a popular song
that topped the charts on both sides of the Atlantic.

The song continues without mentioning what else we should adorn ourselves with, so perhaps visitors to the American West Coast, and the Golden City in particular, won’t be too surprised should their sightseeing take them into a club there called ‘The Quake’.

One feature of a decor, attractive to fishkeepers, would be the 30 ft. aquarium complete with piranha (what else?). You may well ask that question, because the tank also includes a toleless mermaid—and not one of the ceramic kind we aquarists over here have learned to live with.

The club also boast a revue, the finale featuring a reconstruction of the famous, devastating earthquake that hit the city in 1906. I can promise the club owners one thing: if they ever brought the show to Britain it would also shake a few foundations over here!

***

If you want to brighten up that card game you can do no better than to purchase a set of the new fish playing cards now on the American market. As well as the usual spots, each card bears a coloured picture of a tropical fish with the names printed below.

A deck of these should brighten up any card session and educate the guests amongst our ranks; personally I prefer to follow the horses—and the horses I pick usually do follow the other horses!

***

With so many ball point pens about it is no wonder that the poor old pencil has taken a back seat. A letter from a Stateside fishkeeper enlightened me about an even earlier writing instrument that had distinct ‘fishy’ connections. The club urchin (Cidaris tribuloides) is often washed up on the coasts of Florida, where the beaches are littered with them. Looking like a many-spined sea mine, this creature’s spines were used by the early settlers to those parts as slate pencils. If poor old Columbus had to scratch out his reports with these it’s no wonder he was a man of few words!

THE continuing story of HORSFORTH A.S. should be an assured one in the hands of the present band of junior enterprise group, at their own suggestion, provided all the material for the entertaining of members at the club’s own Members Show recently. The varied programme included a slide quiz presented by Andrew Jobbins, followed by a tape quiz given by one of the younger junior masters, Master Jimmy Dugdale. Master Nicholas Holmes gave a 10-minute lecture describing the problems he encountered in making an outside fish pond and the pleasure he gets out of it now it is completed. Junior editor Master Paul Kirby answered questions fired at him from the audience.

The lighter side of the entertainment was provided by Master Phillip Sunderland, who presented a fine selection of music on his mouth organ and by comedian Master Stephens Elstob who had the difficult task, very successfully achieved, of putting over gags and jokes to the club. Master of entertainments was Andrew Jobbins.

Sixty-four fish were entered for the show, of which Mrs. B. Holm took the award for best in show. Other winners were: Anemones, 1, Mr. Atter; 2, Mr. R. Hammond; Mrs. P. Hall; 1, Mrs. Holm; 2, Mr. R. Hammond; Cuttlefish and loach, 1, Mr. Atter; 2, Mr. R. Hammond; 3, Mr. Lancaster; Livebearers, 1, Mr. Atter; 2, Master N. Holmes; 2, Mr. R. Hammond; Butter, 1, Mr. J. Callaby; 2, Mrs. B. Holm; 5, Mr. R. Hammond; 1, A.A.W.; 2, Mr. R. Hammond; 3, Mrs. J. Dickson; 3, Mr. R. Shaw, Carassius 1 and 2, Mr. R. Hammond; 5, Mrs. R. Hammond. Junior A.A.W., 1, P. Kirby; 2, J. Callaby; 2, H. Paws, First prize winners were presented with gold statuettes instead of the more usual club caps.

SINCE the beginning of the year, OLDHAM & D.A.S. has increased steadily in numbers and a full programme has been arranged for the whole summer period. Members thoroughly enjoyed their day’s visit to the Huddersfield Show, even though club results were disappointing, and each weekend is now taken up with shows in the area.

WAKEFIELD & D.A.S. announce that they have a number of illustrated quizzes available on loan. Societies interested in booking these should contact secretary Mr. F. Cooke, 21 Yaxley Well Lane, Wakefield, W. Yorks.

visits to places of interest. Meetings are held at the Oldham Community Centre, Clegg Street, Oldham, on the first and third Monday of each month and an additional meeting is held on the fourth Friday at Werneth Park Study Centre where the opportunity to prepare tanks for public viewing has recently arisen. With a new outlook and new methods of catering for the varied tastes of members, the club looks forward to an enjoyable year. Societies wishing to visit or be visited are asked to contact secretary Mr. D. Prater at 20 Long Rushes, High Crompton, Oldham, Lancs.

A GOOD deal of time at the EASTBOURNE A.S. annual general meeting is taken up with discussion on the setting-up, stocking and the current season’s maintenance problems arising from the Society’s taking over the Blue Grotto Public Aquarium. It is also hoped to produce an illustrated guide that can be made available to the public visiting the Aquarium. Officers elected for the current season are: chairman, Mr. M. Saunders; vice-chairman, Mr. A. Clark; treasurer, Mr. M. Rudman; secretary, Mr. C. George (6 Hurst Road, Eastbourne, Sussex); show secretary, Mr. R. Rogers; and Mr. P. Sumpner and Mr. Harris.

Members at the first meeting in March organised by the new committee enjoyed a plant identification competition and a talk on the plants used. Other programmes for the year include lectures and demonstrations on tank cleaning, fish breeding, setting-up aquariums, marine fish-keeping, slide shows and table shows. A cheerful welcome awaits any fishkeepers in the area who would like to go along to the meetings. These are held on the first Monday in the month at the Society’s clubhouse, the Blue Grotto Public Aquarium, Royal Parade, Eastbourne (or phone the secretary at Eastbourne 32232).

WINNERS of the REIGATE & REDHILL A.S. annual awards for 1967 have now been announced. Annual Points trophies: tropical, G. Bass; coldwater, W. Leach; novice tropical, Margaret Nicoll. The A. Barley Siamese fighter cup, A. Barley. Home farmed aquaria, P. Collins. The W. Leach breeders cup (livebearers), G. Bass. Williams breeders cup (egglayers), G. Bass. The Reigate & Redhill A.S. Magazine Annual cup for the club member who has given the most selfless service to the club in the current year: Mr. W. Brookfield. Club meetings have included the running of the slide show from
Highlands Water Gardens. A large audience were very enthusiastic about it—"even the tropical crowd were enthralled" writes Mr Frank Young. On another occasion Mr R. Eton addressed the society on genetics and enlightened his audience on the mysteries of heredity and variation in fish.

Table show results have been:


Owing to the resignation of the Society's chairman, Mr G. B. Bass, for domestic reasons, Mr A. Burley is now in the chair.

COMMENTING on a recent slide show on killifish, Mr B. Mann, editor of the COVENTRY POOL & AQUARIUM SOCIETY's newsletter, defines the fascination of our hobby thus: 'One of the attractions of keeping fish at home is that you can have yourself created a small world, the success of which is dependent on your own efforts. . . . I think that killifish go one better in the sense that one can decide at will when one is going to create another community.'

FORTY members and guests of BOURNEMOUTH A.C. enjoyed a very varied programme at their March meeting. A film showing the use of the seine net in the fishing industry incorporated some first-class underwater photography of the net in action; this was followed by a film in colour on the fishing of the bluefin tuna for sport, which also dealt briefly with the life cycle of the fish. A raffle, an auction and a question period, with the questions submitted on slips of paper, followed.

The table show was judged by Mr J. V. Jeffery with the following results: Danios, rasboras and minnows: 1. Mr D. Hagg (51); 2. Mr Coomes (79); 3. Mr R. Travers (71). Owner-bred pairs: 1. Mr Coomes; 2. Mr Watkins; 3. Mr Wise. Meetings are held at the Kinsen Community Centre, Pelhams Park, Kinsen, and anyone interested in the hobby is cordially invited to contact secretary Mr I. Andrews, 17 Plenmont Close, Parkstone, Nr Bournemouth, Hants, for further details.

SOCIETIES—make a note of the date of THE AQUARIUM SHOW (5th-10th November) in London. Your entries will be invited when show schedules are available.

THIRTY-SEVEN members attending the second meeting of BLACKWATER A.S. thoroughly enjoyed the lecture given by Mr Graham Leadley of Stone A.S. on tropical plants. Not only were the plants illustrated in 60 coloured slides, but the audience found it especially helpful to see so many actual plant samples. At the third meeting, Mr Yallop, the proprietor of the local pet shop and a keen and experienced aquarist gave a talk on breeding barbs. Table show results at these two meetings were: tetras: 1, Mr Young (75 pts); 2, Mr Yallop (73); 3, Mr Painton (72). Livebearers excluding guppies: 1 and 2, Mr. P. Clayton; 3, Mr B. Mills. Slide shows are planned for the April and June meetings and a film will be shown in August. Visits have been arranged to the London Zoo and the Burnham Fishing Research Station; it is hoped to visit the Maldon Oyster Fisheries. Members also intend to furnish a tank in the Old Folks section of the local hospital and the matron is being approached in this connection. A warm welcome and an enjoyable social evening awaits anyone in the Maldon area with any interest in tropical or coldwater fish at club meetings. These are held on the third Wednesday of the month at 8.00 p.m. at the Royal Oak, Hayleight, Maldon. Further details will be supplied by Mr G. Kempen who has now taken over as secretary (47 Hall Estate, Goldhanger, Nr Maldon, Essex). Three new committee members have also been elected: Mr R. Davis, Mr R. Warren and Mr G. Hockley.

THE TRADITIONAL annual dinner and dance of HENDON & D. A.S. members was as successful as ever and nearly 100 people attended this enjoyable occasion. It was on this occasion also that the Society's two most prized awards were given to their respective winners by the President's lady—the Troman trophy to Mr Keith Purbrick and the President's trophy to Mrs Sheila Finch. Another occasion enjoyed by members recently was the meeting at which Mr Don Walker spoke on the keeping and breeding of egg-laying toothcups and on dwarf cichlids. Mr Walker gave an account of his own experiences with these fishes and the audience learnt a great deal from him.

Hendon welcomes anybody interested in fishkeeping to its meetings every Thursday at 8.00 p.m. in the Brotherhood Hall (200 yards from Schweppes), Edgware Road, West Hendon, London, N.W.2 (secretary Mr Keith Purbrick, 3 Holme Way, Stanmore, Middlesex; will be pleased to supply further details). With the enrolment to its membership of Mr and Master J. Bridbury of Bagumbury, South Africa, the Society can now claim membership in four continents. The wastes of Antarctica may expect attention soon!

WHEN YORK & D. A.S. held a debating evening recently, Mr P. Casey supported the motion: "Large fish are of more value to exhibitors than small species", because of his belief that the bigger the fish the more likely were they to win the prizes in preference to small ones at nearly all shows. The majority vote, however, supported Mr M. Smith, who in speaking against the motion maintained that there was more pleasure in exhibiting small species, that they were easier to net and stood less chance of damage.

Another subject that came under discussion was the necessity or otherwise of using living plants in the aquarium. Mr H. G. Sutton raised the point that live plants, in any case, quickly vanished if, for example, part of the glass tubing or glass in a fish tank were kept; but Mr K. Harrison won the support of the majority of members when he maintained that the use of live plants produced more natural conditions and a better balanced aquarium.

'Aeration is necessary in a community tank' is also a statement with which the majority of the Society's members disagree. Mr G. Waubby suggested that aeration was necessary, particularly at night since plants only oxygenate the water during the day. Mr Thiel spoke against the use of aeration on the grounds that it stirred up the dirt, that the buzzing of the pump disturbed T.V. viewing and that, in any case, if a tank was well planted, aeration was not necessary.

HEYWOOD & D.A.S. decided to leave in the class for a.c. marines in the schedules of both their open shows this year (one already held at the end of March and the second show to be held on 6th October) in the hope that this class would become more popular.
LOUGHBOROUGH & D.A.S. are hosts this year at the annual Convention and open show of the MIDLAND ASSOCIATION OF AQUARISTS SOCIETIES on Sunday 13th May at Loughborough Town Hall. The open show is being staged in the Corn Exchange and the Convention in the Victoria Room. Show secretary Mr P. Heppenell (61 Morley Street, Loughborough) will supply further details and show schedules, or application can be made to M.A.A.S. secretary Mr A. E. Allop (50 Cubley Road, Hall Green, Birmingham).

inter-club shows are to follow. Interested fishkeepers are welcome on the second and fourth Thursday in the month at 8.0 p.m., at The Victory Club, 227 Sellhurst Road, South Norwood, London S.E.25 (2 minutes’ walk from Norwood Junction Station).

THE DUNDEE A.S.-PERTH A.S. inter-club meeting resulted in a narrow win to DUNDEE A.S. (25 points to 27), which thus retained the Tay Trophy. Mr N. Whittle of Perth received the best fish in show award with a Ciclasoma severum.

Champions: A’1. & 2, Mr G. Mitchell; 2, Mr R. Brown; 3, Mr R. Baxter, Cadfish; 4, Mr A. G. Miller, Cadfish; 5, Mr T. B. Haddow; 6, Mr G. Henderson, Large clolths; 1, Mr T. B. Haddow; 2, Mr N. Whittle; 3, Mr G. Mitchell; 4, Mr B. Hill, Anabantoidea; 1 and 2, Mr G. Henderson; 3, Mr A. Gasson; 4, Mr A. Hartie, Breeder, Egg-layers; 1, Mr G. Mitchell; 2, Mr A. Bet. Breeder, Egg-layers; 1, Mr R. Baxter.

The tape/slideshow at this meeting was the 'Brack Walker Show' mostly featuring catfishes. Despite certain ‘language’ difficulties, it proved very interesting.

BRIGHTON & SOUTHERN A.S. members heard a particularly interesting lecture from Mr D. Soper of Burgess Hill, Sussex in March on the use of vitamins and their effects on the various parts of the fish’s body. He explained how he used a synthetic vitamin E in particular to promote fish reproduction and showed in what form this had to be used and the dosage required. Mr Soper mentioned the vitamins present in the aquarium and how a deficiency of any special vitamin could be made up. He went on to show various substances that he had found beneficial in his fishes in bringing them into breeding condition and in promoting growth and colour.

At an earlier table show for characins there were 22 entries, which pleasantly surprised judges Mr Armitage and Mr Marks from Portsmouth A.S. Awards were made to the following (and it was very pleasing that several new members took awards): 1, Mr J. Milner (Bream); 2, Mr D. Shoulders (breeding heart tetra); 3, Mr A. Riley (cardinal); 4, Mrs B. Elms (black widow). Prospective new members should contact the secretary Mr R. B. Sheldon (45 Coventry Street, Brighton) and can be assured of a warm welcome at fortnightly meetings.

A LARGE number of members of ELLESMERE POLE T.F.S., attended the first table show of the year, judge Mr B. Coslett. The best fish in show was a female red swordtail owned by Mr J. Bowyer. Other winners were:

Barbs, 1, Mrs C. Kerr; 2, Mr D. Cameron; 3, Mr J. Smith; Breeder Barbs, 1, Mr J. Bowyer; 2, Mr D. Cameron; 3, Mr R. Punch. Catfish, 1, Mr B. Hall; 2, Mr A. Hartie; 3, Mr A. Gasson. Catfish, Breeder, 1, Mr A. Hartie; 2, Mrs C. Kerr; 3, Mr R. Punch.
Sixth Open Show at Huddersfield

A HARDY folk are they in Huddersfield judging by the amount of stamina shown by HUDDERSFIELD T.F.S. members in tackling their big weekend in March. The annual dinner held on the Friday night took place at the Night Club and casino owned by club president Mr J. Marsden, who was able to arrange that the dinner and first-class cabaret featuring Wee Willie Harris should be held before the club's official opening time so that the younger members of the society could enjoy it all. The adult members were then able to continue to enjoy all the club's amenities up to the 'small hours', and, says secretary Mr Kaye, it was a really enjoyable night out for everyone. The annual trophies were presented by the president to the dinner guests in the following:

Anabastids: 1, Mr F. Ledger; 2 (joint) Mrs Robinson and Mr A. Hudson; 3, Mr L. Kaye. Cichlids: 1, Mr J. Woodhead; 2, Mr P. Booth; 3, Mr A. Hudson. Livebearers: 1, Mr F. Ledger; 2 (joint) Mr J. Wake and Mr J. Blainieres; 3, Mr A. Kaye. Characins: 1, Mr J. Wake; 2, Mrs B. Kindler; 3, Mrs Robinson. Barbs: 1, Mr A. Kaye; 2, Mr B. Kaye; 3, Mr F. Ledger. Catfish and loaches: 1, Mr J. Bowell; 2, Mr B. Kaye; 3, Mrs Robinson.

Then, on the Sunday, members arrived in full force to stage the Society's sixth open show. This was a great success, drawing 581 entries from competing societies, though the number of entries was not overwhelming; three classes had to be transferred to an adjoining room and a few eyes kept on heavilyaden tables. However, all went well and the Society, in thanking exhibitors for taking along their fishes and suffering the rather crowded conditions, promise a large spacious room and excellent catering facilities when Huddersfield Town Hall is the venue next 16th March.

Prize-winners were:

Guppies: 1, Mr Mawson (Workshop); 2, Mrs Todd (Huddersfield); 3, Dr J. Taylor (Workshop). Moorhens: 1, Mr and Mrs J. and H. Dernie (Workshop); 2, Mr J. Whiteley (Workshop); 3, Mr W. Ellis (Valley). Rainbow fishes: 1, Mr and Mrs J. and H. Dernie (Workshop); 2, Mr R. Batten (Featherton); 3, Mr A. Estes (Huddersfield).

The HANDBOOK FOR 1968 published by the FEDERATION OF SCOTTISH AQUARIIST SOCIETIES is now available, price 35. 6d. plus postage, from F.N.A.S. treasurer, Mr Robert Ferguson (Intervar, 27 Watson Street, Fallnesh, Scotland). The HANDBOOK'S contents include notes on the breeding of various species, by Convention prize-winners, a Directory of pet shops and public aquaria and a list of some available programme aids.

Stephen Kaye receiving the trophy for juniors from Mr J. Marsden (right) watched by Mr F. Ledger, winner of the Jonathan trophy (centre)
A SHOW planned by juniors with juniors in mind. This is the watchword of the HUTTON GRAMMAR SCHOOL A.S. third Junior open show that is to be held on 29th June at the School, Preston, Lancs., and to show committees of the GOLDFISH SOCIETY OF GREAT BRITAIN visited many fish shows to assess the availability of specimen fish. By early September we were convinced that comets were available which were worthy of forming a basis for the construction of a standard drawn up according to G.S.G.B. principles, written by Mr. Mordaunt Clow in the latest G.S.G.B. Bulletin. The fish must have a more slender body than the standard single-tail or common goldfish. It must have pointed fins and a much developed deeply forked caudal fin. The committee met several times and agreed upon the essentials, and the pointing, but difficulties arose providing a diagram which was really authentic. A fractionally wrong curve or dimension made a considerable difference to the acceptability of the drawing. Unfortunately we were not sufficiently satisfied with our progress to enable us to present the provisional standard to our members for approval at our quarterly meeting in November.

Type specimens of broad-tailed moors were not encountered, however, although photographs of such fish are available. Basically the fish is the G.S.G.B. globe-eye with the caudal and dorsal fins of the G.S.G.B. twin-tail. Mr. Clow notes: 'This standard is most difficult to achieve and we have thought it advisable not to demand the cone-shaped protruding eyes, but to settle for well-developed bulbous eyes, which are more easily come by.'

In Brief...

- CHAIRMAN and secretary of DIDCOT & D. A.S. is now Mr. F. D. Hall (Fernham Road, Shillingford, Faringdon, Berks). Meetings will be held on the first and third Friday of each month at 8.30 p.m. in the Essex Research Social Club, Steventon, Abingdon, Berks.

- It is hoped to re-form the PETERBOROUGH & D. A.S. Mr. D. Worlding (21 Cumberland House, St. Mary’s Court, Peterborough) would be very glad to hear from those in this area who are interested.

- ALFRETON & D. A.S. re-elected the following retiring members at the club’s annual general meeting: secretary, Mr. A. Dooley (169 Birchwood Lane, Somercotes, Derby DE5 4NH); treasurer, Mr. S. Dooley; show secretary, Mr. S. Hill; committee members, Mr. D. Gould, Miss M. Lindley, Mr. J. Robinson. The society’s annual Points trophy was awarded to Mr. S. Hill (runner-up, Mr. J. Wright; third, Mr. D. Gould).

- SOUTH WALES aquarists please note! A new Society has been formed at LLANELLI (secretary, Mr. T. D. Davies, Flat 8, West End, Llanelli, S. Wales). Club meetings are held every fourth Tuesday at 7.45 p.m. The secretaries will be very pleased to supply further information and visitors and potential members will be warmly welcomed.

- OFFICERS appointed for the current year by members of BETHNAL GREEN A.S. are: chairman, Mr. A. Collings; treasurer, Mr. J. Hayes; secretary, Mr. L. Smith; show secretary, Mr. J. Day; assistant show secretary, Mr. A. Millhouse; P.R.O., Mr. D. Train (6x Downs Park Road, London, E.8). The club meets every Tuesday night at 7.45 p.m. at the Bethnal Green Evening Institute, 229 Bethnal Green Road, London, E.2, and new members are very welcome.

- WOLVERHAMPTON & D. A.S. has now been re-formed. Premises have been found at 8 Worcester Street, Wolverhampton, for club meetings, which are to be held at 8.0 p.m. on the first Tuesday of each month (formal meeting) and the third Tuesday of each month (for practical instruction). Club shows are arranged and an outing is being organised. Original members would be most welcome 'back in the swim' and there is plenty of room for newcomers. A junior section is also in the process of being formed. All enquiries please to secretary Mr. C. O. Barby (13 Queens Court, Fallings Park, Wolverhampton).

- MEMBERS of RUGBY & D. A.S. are still waiting to see what happened to the first 20 slides when they attended the club meeting for a slide show on this subject. The programme was a bit short! This was the first meeting held at the new venue, Northlands School, Vinders Lane, and there were no complaints about the greater space available.

- WAKEFIELD & D. A.S. are preparing early for the B.A.F. competition is being held amongst members for the best drawing for a stand, and a prize will be awarded for the most practical entry. Table show awards at the club’s first March meeting were: Furnished jar, 1 Mr. G. Babby; 2 Mr. D. Fox; 3 Mr. A. Cotton. A.O.V. 1 Mr. R. Kitchen; 2 Mr. G. Babby; 3 Mr. C. Archer. A.O.V. novice: 1 Mr. A. Walker; 2 Mr. D. Fielding; 3 Mr. M. Townsend. Meetings are held on the second and fourth Tuesday of each month at the Central Buddhist House, 156-165 Newmarket Road, Wakefield at 7.45 p.m. Secretary Mr. S. Cooke (21 Lane End Vale Lane, Wakefield). Write for further details, including those on the special reduced rate for novices and equipment for old-age pensioners.

- BIRMINGHAM AREA. A new society has been formed, to be known as the LONGBRIDGE & D.A.S. The club will meet on the first Friday of the month at the Co-op Hall, corner Bristol Road South, Clifton Rock Road, at 7.45 p.m. A first meeting produced very encouraging results and evidence of excellent support for the Society. The committee elected were: chairman, Mr. D. Dyas; vice-chairman, Mr. R. D. Mole; secretary, Mr. L. Cottam (13 Cottage Lane, Marbrook, Bromsgrove, Worcs.); show secretary, Mr. P. Massey; treasurer, Mr. G. Shipman. Anyone interested in joining, either beginner or expert, will be most welcome and should contact the secretary.

- THE CHAIRMAN of HEYWOOD & D. A.S. expressed his thanks to the members of the committee and the sponsors for their help and support during the year. The committee elected was: chairman, Mr. R. Johnson; vice-chairman, Mr. B. Woots (secretary, Mr. J. Hayes; treasurer, Mr. J. Wood; Continued on page 83
The CORRECT DIET for ALL Coldwater Fishes

SURE
GOLD

1/8 & 4/6
The Original and Best Pellet Food
From Good Pet and Aquarium Shops Everywhere
Does NOT contain any waste elements such as dried flies, biscuit meal etc. ——— IT FLOATS! ———

MADE IN GREAT BRITAIN

A Quality Product from:
SOUTH COAST AQUATIC NURSERIES LTD.
SCANCO Division, WINDSOR, BERKS.

"I saw your advertisement in PFM"
THIS IS A COMPETITION FOR EVERYONE TO ENTER
SEND YOUR ENTRY FORM NOW ! ! ! 
THE FIRST NATIONAL FURNISHED AQUARIUM EXHIBITION

will be held at St. George’s Hall, Bradford, on Wednesday, Thursday, Friday, Saturday and Sunday, June 12th, 13th, 14th, 15th and 16th.

This competition is open to all keepers of tropical fish, professional and non-professional alike, and there will be a separate section for Marine Aquariums.

The organisers will provide 24" x 12" x 12" stainless steel aquarium with hood, lights and heater/thermostat.

TAKE PART IN THIS INTERESTING COMPETITION . . . .
send your entry form TODAY.

FOR YOUR CONVENIENCE . . . . .
* refreshments will be available during the setting-up period and throughout the duration of the exhibition * there is seating, in the hall, for 500 people * there is adequate parking space within 50 yards of the exhibition hall, and the main line railway station and the bus station are within easy walking distance.


RULES AND REGULATIONS
2. Judges’ decision will be final.
3. Entries accepted up to May 10th at 25/-.
4. Late entries accepted up to June 1st at 35/- and no entries will be accepted after June 1st.
5. Any competitor may enter any number of entries and win any number of prizes.
6. No aquarium will be dismantled under any circumstance before 6 p.m. on the final day.
7. All aquarium water will be removed by the management.
8. Any persons employed, relates, or in any way connected with the organisers are exempt from entering the competition.
9. Whilst the utmost care will be taken, the organisers cannot be held responsible for loss of, or damage to, any property or fixture or fitting entered by the competitors in the exhibition hall prior to and throughout the duration of the exhibition.
10. The organisers reserve the right to refuse any exhibition entry.
11. The Hall will be open to competitors from 10.00 a.m. to 8.00 p.m. on Saturday and Sunday, June 8th and 9th, for the purpose of preparing exhibits.
12. Standard lighting will be provided by the organisers, comprising 300W lamps or 60W lamps; no alternatives will be permitted.
13. No competitor will be allowed in the Hall whilst judging is taking place.
14. Judging will take place on Monday and Tuesday, June 10th and 11th.
15. Any unforeseen circumstances will be dealt with by the organisers, at their discretion.
16. Each entrant will receive his numbers and final instructions by June 1st.
17. If required, a form will be available authorising the show committee to feed the competitors’ fish during the show.
18. All entry forms must be accompanied by entry fee(s).

ENTRY FORM

To: Keith Barraclough, 568, Great Horton Road, Bradford 7, Yorks.
The First National Aquarium Exhibition, Bradford, June 1968.

I, (name)............................................................. Address............................................................ wish to submit............................ entries

(25/- per entry up to May 10th, late entries 35/-), for the National Furnished Aquarium Exhibition, Freshwater/ Marine section (delete where not applicable).

Please find enclosed P.O./Cheque to value £....................... P.O. no.......................... Cheque no..........................

This entry form confirms the acceptance of the rules and regulations laid down above.

Entrant’s signature.......................................................... Date..........................

SPONSORED BY KB. TROPICAL FISH, 568 Great Horton Road,
Bradford, 7

Assisted by Bradford District Aquarist Society

ALL METAFRAME AQUARIUMS AND FITTINGS BY INTER-PET

Please mention PFM when writing to advertisers
In Brief

Continued from page 80

assistant treasurer, Mr J. McBride; show secretary, Mr K. Hill; awards secretary, Mr T. E. Davies; minutes secretary, Mrs M. Corns; P.R.O., Mrs M. Hill. The club extends a warm welcome to visitors to attend a club meeting, held every other Thursday at 8.0 p.m. at the Heywood Labour Club, Bridge Street, Heywood.

NEWLY elected officers of the ASSOCIATION OF MANCHESTER & D. A.S. are: chairman, Mr E. Price; vice-chairman, Mr F. Mull; secretary, Mr W. Kelly (31 Siddel Street, Liverpool 17); treasurer, Mr K. Parke; show secretary, Mr A. Ferrell; retiring chairman, Mr M. Fidler, spoke of the Association's progress in the year since its inauguration. The formation of the NORTHERN SHOW LEAGUE had proved very successful and the ichthyological course instituted at Glossop had aroused great interest. It was hoped that this idea could be enlarged in scope. A three-page list of programme aids would also be published, and additions to this were already in preparation.

OFFICERS elected by members of DERWENT A.C. for the current year are: chairman, Mr S. Yeomans; secretary, Mr D. Gates (21 Mount Carmel Street, Derby); treasurer, Mr T. Swinburn; librarian, Mr W. Swynne; committee, Mrs N. Gates, Mr R. Johnson; auditors, Mr F. Reader, Mr W. Phillips.

THURROCK A.S. members are enjoying a series of informative and interesting talks. They have heard about fish house construction from Mr K. Appleyard, setting up tanks, breeding and correct feeding from Mr R. Nicholls and selective purchase by Mr E. Nicoll. Table show results at these meetings have been: Guppies: 1, Mr D. Durrant; 2, Mr D. Hornsby; 3, Mr F. Harkins. A.V. mollies: 1, 2 and 3, Mr K. Appleyard. A.V. barbs: 1, Mr H. Juson; 2, Mr D. Durrant; 3, Mr K. Appleyard. Platy's: 1, Mr M. Martin; 2, Mr P. Hinkley; 3, Mr P. O'Bryan; 4, Mr H. Juson. A.V. fighters: 1, 2 and 3, Mr D. Durrant; 3, Mr H. Juson. Egg-laying tooth carps: 1, Mr K. Appleyard; 2 and 3, Mr P. Hinkley.

ARRANGEMENT are well in hand for the WORKSOP A.S. & Z.S. open show on 12th May. It is being held at the College of Further Education, a venue that enables an invitation to be extended to all aquarists and their families without fear of overcrowding. Officers elected for the year are: chairman, Mr G. Sibson; show secretary, Mr A. Mawson; treasurer, Mr J. Dernie; news editor, Mr B. Waplington; secretary, Mrs H. Dernie (89 Sparken Hill, Worksop, Notts).

THE WEST LONDON SECTION of the FANCY GUPPY ASSOCIATION has now held five successful meetings and 90 fish were entered for the monthly table show in March. New members are always welcome at meetings at the Community Centre, Clifton Road (opposite the Fire Station), Isleworth, Middlesex and details will be supplied by Mr J. Thorne, 108 The Grove, Isleworth (06-0727) or Mr M. Richardson, 20 Maylands Drive, Uxbridge, Middlesex (Uxbridge 39935).

BRISTOL A.S. table show series for 1967 was won by Mr H. Jago (40 points); 2 (joint), Miss H. Morgan and Mr F. Brown (26 pts); 4, Mr Crouch (12). In connection with the club's open show, Mr J. Lewis (150 New Fosseway Road, Hengrove, Bristol 4) has been elected show manager. Show secretary Mr R. Berry (20 Fournacre Crescent, Downend, Bristol) has already booked the dates for several meetings that schedules will be available at about the beginning of May. In the meantime, club meetings are well attended, and a packed hall greeted Mr Stan Lloyd when he lectured on "Breeding and rearing shubunkins".

WARRINGTON A.S. president, Mr All Higham, awarded plaques to the winners of the fish of the month annual competition: 1, Mr Brian Beowick; 2, Mr Bernard Worrall; 3, Mr Ron Trench; 4, Mr Kevin Hamblett; 5, Mr Pete Norris. Club officials elected at the recent annual general meeting are: chairman, Mr Ron Trench; secretary, Mr H. Bennis (24 Crofton Road, Runcorn, Cheshire); show secretary, Mr Jim Higham (42 Hood Lane, Warrington, phone 36919); treasurer, Miss Sandra Worrall; judging chairman of the-month organiser, Mr Kevin Hamblett. The re-introduction of label name tags and the cheerful atmosphere of the new clubroom at the White Hart Inn all help to contribute to easy fellowship in the society and new members are cordially invited to contact the club secretary for details of meetings.

MEMBERS of ENFIELD & D. A.S. found the lecture given by Mr K. Nutt of Tottenham & D. A.S. on the breeding of anabantids very helpful. Table show results at this meeting were: Cichlids: 1, Mr K. Pallett; 2, Mr M. Rhodes; 3, Mr T. Mann; Gourmets: 1, Mr T. Mann; 2, Mr J. Horten; 3, Mr H. Seymour.

10 MEMBERS of NEW FOREST A.S. and their guests enjoyed taking part in the quiz compiled by Mr K. Hinton and presented by Mr A. Williamson at the March meeting. Table show results (judge: Mr C. Knapp) were: a.v. platey: 1, Mr Lee; 2, Mr A. Williamson; 3, Mr D. Hate, a.v. mollie: 1, Mr D. Hate; 2, Mr K. Newton; 3, Mr R. Travers.

THE newly formed VERULAM AQUATIC GROUP of Hertfordshire has had a very successful first show outing taking 10 awards, four
of them firsts, at the Tottenham & D. A.S. open show. The group was formed by seven aquarists to further their knowledge of fishkeeping and enjoy the hobby. Monthly slide and film shows are booked for the next 12 months and a number of lectures. Further information from Mr Dave Lelliott (19 Prospect Road, St. Albans, Herts.)

... REIGATE & REDHILL A.S. have recently made the following changes in their committee: chairman, Mr A. Burley; vice-chairman, Mr N. Packman. The position of assistant show secretary has been taken by Mr S. Perham and Mr A. Taylor is a new committee member. Recent activities include the holding of a slide and tape show by courtesy of Horsforth A.S., a table show with Croydon A.S. and a very successful Brass & Bay evening with Croydon A.S. and South Park A.S. as guests. ‘Other clubs please note’ writes the club’s P.R.O., ‘it is as easy to auction a bow and arrows, car accessories and James Bond novels as it is the fish.’

NEW venue for AIREBOROUGH & D.A.S. meetings is Guiseley Co-op Hall. Recent table show results have been: Croydoras 2; 1; 2; 3; Mrs J. Barritt; 2; and 3, Mrs T. Robinson. Novice: 1 and 2, Mr J. Robinson; 3, Mr J. Kay; Junior: Master A. Streton, Mini-jars (advanced): 1, Mr P. Barritt (slate and plants); 2; Mr B. Mitchell; 3, Mr R. Lister; Novice: 1, Mr C. Thompson (slate and plants); 2; Mr J. Kay; Junior: Master A. Flecher (coal and plants); 2, Master J. Stott. Best fish in show award, Mr P. Barritt.

... THE SOCIETY OF AQUARISTS SOUTH STAFFS would be pleased to hold more inter-society shows throughout the summer. Any interested society within travelling distance is asked to contact secretary Mr F. Ash (292 Harden Road, Walsall, Staffs.). Club member Mr F. Everett has won the table show annual competition with 83 points (2, Mr R. Thurstance, 64; 3, Master M. Westmacoat, 52; 4, Master T. Westmacoat, 27).

... AMERSHAM & D.A.S. would welcome new members. Although membership has doubled in the last year and now numbers 40 there is still room for anyone interested in fishkeeping. They can look forward to a programme as interesting as that enjoyed last year when trips were made to visiting clubs in Chesham and Barton, Cambridgeshire, and talks and demonstrations were given as well as several film and slide shows. Inter-society shows and the club’s own annual open show and Christmas social were highlights of a most successful year. Meetings are held on the first and third Wednesday in the month at the Amersham Community Centre and secretary Mr D. T. Moody (65 Vale Road, Chesham, Bucks.) will be pleased to supply further details.

... THE member of NOTTINGHAM & D.A.S. who has gained most points in table shows throughout the year is Mr K. Binns, who is awarded the Mackenzie & Lynn Challenge trophy (2, Mrs I. Bulleyment; 3, Mrs G. Goodlife). There was no difficulty at all when the General Committee of the club had to decide to whom to award the Appreciation Cup for 1967-8. Mrs I. Bulleyment, and her late husband, received an overwhelming majority for the outstanding effort she and Mr Bulleyment made on behalf of the Society in numerous ways.

... OFFICERS OF MERSEYSIDE A.S. for the year are: president, Mr R. L. Legge; vice-president, Mr Michael Murphy; chairman, Mr F. Mullas; vice-chairman, Mr W. Kelly; secretary, Mr R. Moorcroft (24 Franklyn Road, Liverpool 4); treasurer, Mr K. J. Parkes; show secretary, Mr J. Robinson; librarian, Mr J. T. Wayles; news letter editor, Mrs V. Parkes. Three members of the society have been co-opted on to the F.N.A.S. show committee.

These are Mr Mullas, Mr Kelly and Mr Parkes.

... MR C. Swinburne has won the Denis Smith Challenge trophy for the highest number of points won during the year. The society’s annual general meeting was held on December 19th at the M.E.S.S. Club where the trophy was presented by Mr G. Jennings of the I.M.S.S. The club enjoyed further successes by taking two of the four awards at the F.N.A.S. cichlid competition.

... MR F. STANIFORTH is the new secretary of CRESWELL & D.A.S. (4 Faraday Close, Creswell, Nr Worksop, Notts.)

... BRADFORD & D.A.S. have been calling upon the services of their own club members recently to provide meeting material and two very interesting and amusing meetings resulted. Mr Horace Foden entertained members and inaugurated discussion on a wide range of subjects from fish houses, plants, spawning behaviour and plant growth, while Mr C. Binns, after a talk on glazing a tank and making a chipboard tank, was prevailed upon to glaze the tank that he had taken along to the meeting as a demonstration model, just to show how much he had ‘learned’. Results of the Cream Memorial Trophy and the Thornley Memorial trophy were: Livebearers: 1 and 2, Mr W. Fletcher; 3, Mr Kennedy.

**Dates for Your Diary**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th May</td>
<td>TROBRIIDGE &amp; D.A.S. Open Show, Railway Institute (opposite Derby Midland Railway Station). Schedules from Mr E. Haestadt, 171 Tweedsbury Avenue, Chaddesden, Derby.</td>
</tr>
<tr>
<td>11th May</td>
<td>HENDON &amp; D.A.S. Open Show, The Brotherhood Hall, Edgware Road, Hendon. Applications from Mr Joe German, 411 Honeygrove Lane, Stanmore, Middx.</td>
</tr>
<tr>
<td>11th May</td>
<td>MIDLAND ASSOCIATION OF AQUARISTS’ SOCIETIES. Annual Convention and Open Show, Loughborough Town Hall, Open Show in Corn Exchange. Booking closes 1st October.</td>
</tr>
<tr>
<td>18th May</td>
<td>BRIDGEND &amp; D.A.S. first Open Show.</td>
</tr>
<tr>
<td>15th May</td>
<td>READING &amp; D.A.S. first Open Show, All Saints Hall, Downshire Square, Reading. Schedules from Mr G. Grant, 12 Dover Street, Reading, Berks.</td>
</tr>
</tbody>
</table>
PetFish Monthly, May 1968

19th May. NORTH WARWICKSHIRE A.S. First Open Show. The Settlement, Kingsstanding Road, Kingsstanding, Birmingham 22A.

19th May. KEYNHAM & DAMS.A.S. Open Show. Bridge Legion Hall, Charlton Road, Keynsham, Nr Bristol. Schedules from Mr J. D. Brown, 25 Pearl Street, Bedminster, Bristol 3.

20th May. SOUTHAMPTON & D.A.S. Open Show. St. Denys Hall, St. Denys, Southampton. Schedules from Mr D. A. Gibbs, 57 Wavell Road, Bittern Lodge, Southampton.

22nd June. LLANTWIT MAJOR A.S. Open Show. Schedules early May, from Mr J. Osborn, 196 Langley Way, West Wickham, Kent.

22nd June. CATTENDALE A.S. Open Show. Details from Mr J. Osmon, 25 Saffronfield Road, Aberkenfig, Bridgend, Glam.

23rd June. CATFORD & D.A.S. Open Show. Details from Mr. D. Owen, 196 Langley Way, West Wickham, Kent.

23rd June. NATIONAL FURNISHED AQUARIUM EXHIBITION at St. George’s Hall, Bradford, 1st Entry open to all.

23rd June. YEVIOL & D.A.S. first Open Show. Yeovil Royal School, Yeovil. Details from show secretary Mrs T. Gillard, 43 Crofton Avenue, Yeovil.

24th June. THREE COUNTIES annual Open Show (hosts BRACKNELL & D.A.S.) Victoria Hall, Bracknell, Berks. Show secretary, Mr Ken Flinter, 31 Alexandra Road, Bracknell, Berks.

24th June. BISHBROOK & D.A.S. Open Show. The Drill Hall, Elton Road, Crewe. Schedules 200 from Mr E. Harper, 60 Rogers Avenue, Crewe, Wrexham, Notts.


24th June. SWILLINGTOWN, A.S. third Open Show. Schedules available later.

22nd June. UXBRIDGE & D.A.S. Open Show. Meadow School, Royal Lane, Hillingdon, Uxbridge. Schedules from Mr N. V. Lee, 46 Airedale Road, Ealing, London, W.5.


23rd June. ALFRETON & D.A.S. Open Show. George Hotel, Chesterfield Road, Alfreton. Schedules from Mr R. Hill, 53 South Street, Riddings, Derby.


27th-28th June. BRISTOL T.F.C. Open Show.

27th June. HUTTON GRAMMAR A.S. third Junior Open Show. Preston, Lancashire. Details from show secretary Mr D. J. Radcliffe, Kindu, Todd Lane South, Lostock Hall, Preston, Lancs., PR5 3XE.

27th July. TADCASTER & D.A.S. Open Show. Roman Catholic School, St. Joseph’s Street, Tadcaster. Details from Mr R. M. Fairclough, Station Grove Lodge, Station Grove, Tadcaster.

27th July. CHELTENHAM & D.A.S. Open Show. Ambulance Headquarters Hall, 86 Gloucester Road, Cheltenham.

27th July. BASINGSTOKE & D.A.S. annual Open Show. Carnival Hall, Basingstoke. Booking up to 11 a.m. Open to public after 2.30 p.m. Schedules from show secretary, Mr A. Marshall, 51 Pimina Close, Basingstoke, Hants.

27th July. GOLDFISH SOCIETY OF GREAT BRITAIN quarterly meeting. Details from secretary Mr W. L. Wilson, 57 Constable Gardens, Edgware, Middlesex.

27th & 28th July. ROMFORD & BEACONTREY A.S. Open Show (Dagenham Town Show). Enquiries to Mr J. M. R. Fyne, 3 Ashvale Drive, Crantham, Essex (phone Leytonstone 42435).

27th July. BOURNEMOUTH A.C. Open Show. Kinson Community Centre, Pelham Park, Kinson. Show schedules and entry forms after 1st May from show secretary Mr J. V. Jeffery, 30 Bransum Avenue, Southbourne, Bournemouth.


28th July. PORTSMOUTH A.S. Open Show, Portmore Community Centre, Twoford Avenue. Schedules available from show secretary Mr W. R. Ryder, 493 Commercial Road, Portsmouth.

28th July. RAINWORTH & D.A.S. Open Show. Showroom of E. Taylor & Sons (Southwell) Ltd., West End Garage, Southwell, Notts. Booking 12 noon-2.30 p.m.

28th July-1st August. MIDLAND OPEN SHOW. Bingley Hall, Broadway Street, Birmingham 1. Details from Mr J. Wills, 125 Frankland Road, Kings Norton, Birmingham 48.

1st August-1st September. HARLOW A.S. second Open Show. (Harlow Town Show).

1st September. HIGH WYCOMBE A.S. Open Show.


1st September. NOTTINGHAM & D.A.S. National Open Show.

1st September. WARRINGTON A.S. Open Show.

1st September. HOUSSEY A.S. Open Show, Youth Centre, Cecil Road, Hounslow.

1st September. REIGATE & REDHILL A.S. Open Show (provisional). Details available later from Mr I. Stemp, 10 Benham Drive, Horley, Surrey.

21st September. AMERSHAM & D.A.S. Open Show.

15th September. REIGATE & REDHILL A.S. Open Show.

21st September. NEWPORT A.S. sixth Open Show. Duffryn Junior High School, Chepstow, Newport, Mon. Booking 9.0 a.m.-12.30 p.m. Open to public about 2.0 p.m. Schedules from show secretary, Mr M. J. Parry, 45 Western Drive, Gatliff, Caerphilly.


29th September. HUCKNALL & BULWELL A.S. first Open Show.

6th October. HEYWOOD & D.A.S. Open Show. Heywood Youth Club, Bridge Street, Heywood (2 mins. from Heywood Show on Heywood-Oldham main road. Booking 12 noon-2.00 p.m. Schedules from Mr K. Hill, 29 Cheesendale Lane, Heywood.

9th November. GOLDFISH SOCIETY OF GREAT BRITAIN quarterly meeting. Details from secretary Mr W. L. Wilson, 57 Constable Gardens, Edgware, Middlesex.

17th-20th November. The AQUARIUM SHOW.

19th-21st November. The AQUARIUM SHOW.

PetFish U.K. Currency Guide
Approximate dollar equivalents to the prices given in advertisements for overseas readers
£1 (one pound) .......................... $2.40
£1 (one shilling) ......................... $0.12
£6 (sixpence) ........................... $0.06
£1 (one penny) ........................... $0.01

Examples
£1 6d (or 1/6) .......................... $0.18
50d (or 5/-) ............................ $0.60
6d (or 7/6) ............................ $0.90

£1 17s 6d (or £1/17/9) ...................... $4.53

CAMBRIDGE & DISTRICT AQUARIIST SOCIETY
OPEN SHOW
Sunday June 23rd at the Guildhall, Cambridge
Schedules available from the Show Secretary
Mr. D. Dant, 24 Jackson Road, Cambridge
CLASSIFIED ADVERTISEMENTS

AQUATIC SUPPLIERS

LOWEST POSSIBLE PRICES. South East London's largest aquaria. Over 100 tanks containing numerous varieties of fish. Retail and wholesale. 24 x 12 x 12 in. polycoated tank complete with heater, thermostat and thermometer, 65s. Neons, tiger barbs, 5 for 10s; angelfish, platy, 4 for 10s; many other bargains. Proofs waterfall and fountain pump complete, £3 19s 6d, plus 7s 6d p.p. Plants, fish and equipment sent by post and/or rail. Regret callers only for tanks and ponds. Please send s.a.e. for lists of fish and plants etc. to Lee Aquarium Centre, 266 Lee High Road, Lewisham, S.E.13 (A20 road between Lewisham and Lee). Phone LEE 5191.

KINGSWAY SPORTS, 159 High Street, Barkingside. Tropicals, aquariums, accessories, plants, live food.

TROPICAL AND MARINE FISH. Fresh supplies weekly. Plants, tanks, accessories. Ronada Ltd, 153 Queen’s Rd, Blackburn (phone 57634). Opposite Queen’s Park Flats. Open daily, 9.30 a.m.-6.00 p.m.; Friday 8.00 p.m. Closed all day Monday.

OLDURY’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.

NOW AT NEW PREMISES—BETTA PETS, 28 Watery Lane, Preston (phone 27155). Specialists in tropical, marine and coldwater fishes. 43 tanks on display. All equipment and accessories in stock.

NORTHERN IRELAND. Breeders of tropical and coldwater fish and plants. All equipment supplies. Mr Alfred Robbins, Grosvenor Tropicals, 88 Woodstock Road, Belfast.

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


CLASSIFIED ADVERTISEMENTS

Rates: 6d. per word (minimum charge 6s.); Box no. 2s. extra if required, Remittance with order to be sent to PetFish Monthly 554 Garratt Lane, S.W.17


OVER 120 VARIETIES tropical, marine and pond fish—for personal shoppers only. Kingfisheries, 308 Croydon Road, Beckenham, Kent Phone 0-650 3716. Closed Wednesdays.

TONBRIDGE AQUARIUM CENTRE. Kent’s newest aquarium. We have over 100 varieties of tropical and coldwater fish, plants, plastic-coated tanks, bow fronts and accessories. Fibreglass pools, streams, from £3. ‘Special offers’ on fish. Call and see the wonderland of aquarists. 10 Quarry Hill Parade, Tonbridge, Kent. Phone Ton. 63764.

BOOKS

ELECTRICITY IN YOUR AQUARIUM. Originally published at 7s 6d, this 114 pages book with 42 illustrations is now available at 2s 6d post free from PetFish Publications, 554 Garratt Lane, London, S.W.17. Trade enquiries invited.


EQUIPMENT

RUSTPROOFED aquaria, ornamental stands, glazing cement. Equipment manufacturers. S.a.e. Westby’s, Barton, Ormskirk.

SHREDDERS. Made of stainless steel, the Shredders are the only instruments capable of reducing earthworms, white worm, meat, etc. to a size suitable for youngest fry. Price 21s, plus 1s postage. BLANKET WEED REMOVER. In stainless steel, most effective removing blanket weed from plants without damage. Price 3s 9d, plus 9d postage. E. A. Walker, 145 Bure Lane, Christchurch, Hants.

LARGE AQUARIUM, FRAMES, SHADES, STANDS, 1 x 1 x 1 in. steel angle: 361 x 12 x 12 in., 2s; 361 x 12 x 15 in., 12s; 29s. 11 x 11 x 1 in. steel angle: 42 x 15 x 12 in., 42s; 42 x 15 x 15 in., 45s; 22 x 15 x 15 in., 45s; 22 x 12 x 12 in., 22s; 22 x 12 x 15 in., 25s; 48 x 15 x 15 in., 49s. Two-tier stands: 361 x 12 x 33 in., 50s; 42 x 12 x 33 in., 50s; 48 x 15 x 33 in., 67s. Aluminium shades: 361 x 12 in., 30s; 361 x 12 in., 30s; 48 x 12 in., 42s; 48 x 15 in., 45s.

7-in sealed tin aquarium glazing compound 1s., 14-in tin 24s. Shades, compound, sent only with frames or stands. Any size to order. S.a.e. Carriage paid. Money back if not satisfied. Hockney Engineers, Derwent Place, Sweet Street, Leeds 11. Phone 25061.

FISH

BLUE FIN DACE wanted. State price. C. Preston, Nab View, Howgate Lane, Bembridge, Isle of Wight. Phone 2172.

VEILTAIL GUPPIES. 70 varieties tropical fish, also marine fish. 30 varieties tropical plants. Equipment, live food (fresh daily). Weekend 10 a.m. — 9.30 p.m. Weekdays 5 p.m. — 9.30 p.m.

Continued on page 88
AQUATIC SUPPLIERS

LOWEST POSSIBLE PRICES. South East London's largest aquarium. Over 100 tanks containing numerous varieties of fish. Retail and wholesale. 24 x 12 x 12 in. polycoated tank complete with heater, thermostat and thermometer. 65p. Neons, tiger barbs, 5 for 10p; angels, platys, 4 for 10p; many other bargains. Proofs waterfall and fountain pump complete. £3 19s 6d, plus 7s 6d p.p. Plants, fish and equipment sent by post and/or rail. Regret callers only for tanks and ponds. Please send s.a.e. for lists of fish and plants etc. to Lee Aquarium Centre, 266 Lee High Road, Lewisham, S.E.13 (A20 road between Lewisham and Lee). Phone LEE 5191.

KINGSWAY SPORTS, 159 High Street, Barking. Tropicals, aquariums, accessories, plants, live food.

TROPICAL AND MARINE FISH. Fresh supplies weekly. Plants, tanks, accessories. Ronada Ltd, 153 Queen's Rd, Blackburn (phone 57654). Opposite Queen's Park Flats. Open daily, 9.30 a.m.–6.00 p.m.; Friday 8.00 p.m. Closed all day Monday.

OLD BURY'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.

NOW AT NEW PREMISES—BETTA PETS, 28 Watery Lane, Preston (phone 27155). Specialists in tropical, marine and coldwater fishes. 43 tanks on display. All equipment and accessories in stock.

NORTHERN IRELAND. Breeders of tropical and coldwater fish and plants. All equipment supplied. Mr Alfred Robbins, Groenvor Tropicals, 88 Woodstock Road, Belfast.

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

CLASSIFIED ADVERTISEMENTS


OVER 120 VARIETIES tropical, marine and pond fish—for personal shoppers only. Kingfisheries, 308 Croydon Road, Beckenham, Kent. Phone 0–650 3716. Closed Wednesdays.

TONBRIDGE AQUARIUM CENTRE. Kent's newest aquarium. We have over 100 varieties of tropical and coldwater fish, plants, plastic-coated tanks, bow fronts and accessories. Fibreglass pools, streams, from £5. 'Special offers' on fish. Call and see the wonderland of aquarists. 10 Quarry Hill Parade, Tonbridge. Kent. Phone Ton. 63764.

BOOKS

ELECTRICITY IN YOUR AQUARIUM. Originally published at 7s 6d, this t14 pages book with 42 illustrations is now available at 2s 6d post free from PetFish Publications, 554 Garratt Lane, London, S.W.17. Trade enquiries invited.


EQUIPMENT

RUSTPROOFED aquaria, ornamental stands, glazing cement. Equipment manufacturers. S.a.e. Westby's, Barton, Ormskirk.

SHREDDERS. Made of stainless steel, the Shredders are the only instruments capable of reducing earthworm, white worm, meat, etc. to a size suitable for youngest fry. Price 21s, plus 1s postage. BLANKET WEED REMOVER. In stainless steel, most effective removing blanket weed from plants without damage. Price 3s 9d, plus 9d postage. E. S. Walker, 145 Bure Lane, Christchurch, Hants.

LARGE AQUARIA, FRAMES, SHADES, STANDS. 1 x 1 x ½ in. steel angle: 36½ x 12 x 12 in., 28s; 36½ x 12 x 12 in., 29s. 1 x 1 x 1 in. steel angle: 42 x 12 x 12 in., 42s; 42 x 12 x 12 in., 45s; 42 x 15 x 15 in., 45s; 48 x 15 x 15 in., 46½; 48 x 18 x 12 in., 49½; 48 x 15 x 15 in., 49s. Two-tier stands: 36½ x 12 x 33 in., 50s; 42½ x 12 x 33 in. high, 57½; 48 x 12 x 33 in., 62s. 48½ x 15 x 33 in., 67s. Aluminium shades: 36½ x 12 in., 30s; 42 x 12 in., 37½; 48 x 12 in., 42s; 48 x 15 in., 45s. 7½ sealed tin aquarium glazing compound 13s, 14-lb tin 24s. Shades compound, sent only with frames or stands. Any size to order. S.a.e. Hockney Engineers, Derwent Place, Sweet Street, Leeds 11. Phone 25061.

FISH

BLUE FIN DACE wanted. State price. C. Preston, Nath View, Howgate Lane, Bembridge, Isle of Wight. Phone 2172.

VEILTAIL GUPPIES. 70 varieties tropical fish, also marine fish. 30 varieties tropical plants. Equipment, live food (fresh daily). Weekend 10 a.m.–9.30 p.m. Weekdays 5 p.m.–9.30 p.m.

Continued on page 88
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 Aquarium and Pet Shops.

**JOE GRASSBY** Sole Importer

**THE GLEN FISHERIES** MOlobberley CHeshire

"I saw your advertisement in PFM"
WE CARRY IN STOCK—
All your REQUIREMENTS for SUCCESSFUL FISHKEEPING. We INVITE you to WRITE
for our CATALOGUE — OUR POSTAL SERVICE is COURTEOUS and EFFICIENT.

Your Guarantee of Satisfaction
—since 1948

Telephone
2406

WINGATE
7. MARKET STREET
WINCHESTER

Classified ADVERTISEMENTS (continued)

p.m. Vaughan, 6 Rodney St, St Helens
(26871).

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.

COLDWATER FISH. Fancy goldfish,
blackmoors, fantails, calico, celestial,
etc. Sun bass, peacock eye, orfe, etc.
Also large goldfish and coloured carp.
All sent by rail to your home station.
Send s.a.e. for list to: Harvey Stock
Aquatics, 1758 Pershore Road, Cotter-
ridge, Birmingham 30.

TROPICAL FISH BREEDER has
large stock for sale. Fifty varieties—
hone bred—including emperors, neons,
glowlights, unusual livebearers. Phone
Billericay 51936. Trade enquiries wel-
come.

MISCELLANEOUS
BADGES. Every Society needs bright
enamel badges. For best service and
quality contact R. E. V. Gomm Ltd.,
14–15 Frederick Street, Birmingham 1.

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

WATER PLANTS
PERRY’S FOR PLANTS, 1st and 2nd
Awards British Aquarists’ Festival.
Assorted selections tropical or cold,
7s 6d, 10s 6d, 12s 6d. Pallisz. torta,
S. natans, 6s doz. Cryptocoryne becket-
tii, willisi, haematella, 2s 6d each, six
assorted 10s. Water wisteria, giant
hygrophila, 2s 6d. Post 1s. All adver-
tised accessories. C. R. Perry, Profes-
sional Aquarist, 615 West Street, Crewe.

SAGITTARIA, Vallisneria, Ludwigia,
Hygrophila, Bacopa, Eodea, Myrio-
phyllum, 6d each. Rotala, dwarf
Sagittaria, Ambulia, Cabomba, 9d.
Indian fern, Riccia, wisteria, giant
Sagittaria, hairgrass, Aphodosteum,
dwarf lily, 1s 6d. Giant hygrophila,
Japanese rush, dwarf rush, dwarf
Cryptocoryne, 2s 6d. Striped rush,
Amazon sword, 3s 6d. Post 1s. T.
Hardman, 64 Hornby Street, Bury,
Lancs.

POT LUCK. Special offer (post only).
Grown in heated pools, so disease-free
for fish. 55 tropical quarantined
aquatic plants and 8 cuttings tropical
jungle jar plants for house or fish house.
196 6d post paid. Ian Frazier, Bachelors,
Ockham, Ripley, Surrey.

* GRO-LUX KIT WITH TUBE
For 24” AQUARIUM, 47/6d.

* STAINLESS STEEL AQUARIUMS
24” x 12” x 12”, 57/6d.

MON.—FRI. 10 a.m.—7.30 p.m.
(Closed until 2 p.m. Wed.)
SATURDAY 10 a.m.—8 p.m.
SUNDAY 10 a.m.—2 p.m.

* CICHLIDS a Speciality *

AQUARIUS TROPICAL
Mitcham’s New
Aquarium

76 MONARCH PARADE, LONDON ROAD, MITCHAM, SURREY
Phone: 01–648 0999
PERMA
THE big SILENT PUMP

* SEE P.F.M.
JULY 1967 PAGE 159
FOR DETAILS

£10 15s
EXPORT £8

From your LOCAL AQUARIUM SUPPLIER or IN CASE OF DIFFICULTY WRITE

Aquatic Hobby Ltd 132, WARGRAVE RD., TWYFORD, BERKS.

"I saw your advertisement in PFM"
interested in toothcarps . . ?

IF YOU ARE, JOIN THE B.K.A.

* Monthly newsletter
* Information pamphlet
* Fish and Egg List
* And now . . .
* COLOURED SLIDES at
  regular intervals
  The next fish to be issued is
  shown here.

Aphyosemion cognatum

IF YOU WANT TO SEE IT IN COLOUR, JOIN US

Subscriptions £1 10s. For further details send S.A.E. to:
OR 17/6 AFTER 1st APRIL TO 31st AUGUST. NEW MEMBERS ONLY

26 STAINLESS STEEL
& NYLON-COATED TANKS

M A R I N E S

Wholesale and retail
Rail service available

MILE END STATION

Over 100 varieties
in stock

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

FRED'S AQUARIUM
94 BURDETT ROAD
BOW, E.3 980 5714

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
EWHURST, Nr. CRANLEIGH, SURREY
Telephone: EWHURST 446
VISITORS BY APPOINTMENT
11 a.m.—5 p.m. CLOSED ALL DAY WEDNESDAY & SATURDAY
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. McInerny of McLYNN's Aquarium 85/-
postage 4/6

Please mention PFM when writing to advertisers
The
Bottom Corner Bubble-Up

Draws from the bottom.
Gives rapid water flow
and attractive bubble
effect

Price 9/9
FILTERS
for EFFICIENCY

The DYNAFLO
POWER Filter

A power filter keeps your tank
sparkling clear — helps keep fish in
peak condition. Eliminates noisy
air pumps and the clutter of tubing
etc., near the tank

Standard Model G.400 . . . . . . . £6.17.6
Super Model G.425 . . . . . . . . £7.15.0

INTER-PET Division of Liquifry Co. Ltd. Dorking, Surrey

"I saw your advertisement in PFM"
FOR AQUARIUM TEST KITS AND CHEMICALS USE RILA

RILA SEAWATER pH KIT 30/-

RILA WATER HARDNESS KITS 30/-

NEW RILA SEAWATER NITRITE-NITROGEN TEST KITS 30/-

RILA WATERSOFT POWDER 9/-

RILA REVITA-SOL TRACE ELEMENTS FOR SEAWATER 9/-

RILA FORMULA ‘T’ SALTWATER pH BUFFER 9/-

RILA LIQUIGLASS MARINE SEALER 9/-

SPARE REFILLS AVAILABLE FOR ALL TEST KITS

MARINE FISH SUPPLIES OF ENFIELD
NOW STOCK ONLY THE MOST BEAUTIFUL AND RARE IN CORAL FISH AND INVERTEBRATES
RING 01-363 0285 AFTER 6 P.M. FOR AN APPOINTMENT OR PRICE LIST
LIMITED NUMBERS OFFERED TO TRADE

Visit Bean Hatchery
(Mrs K. Cooper)
54 Swanscombe Street,
Swanscombe, Kent
Greenhithe 3148
Large selection of TROPICALS, MARINES, PLANTS, ACCESSORIES
Call any time, including Sunday

Entry Form
PFM Photo Competition
Please complete in BLOCK CAPITALS

Name
Address

Number of entries enclosed
I have read and will conform with the Rules and Conditions of the PetFish Photo Competition.
I declare that the entry (or entries) submitted are my own work as an amateur and not that of a professional photographer.

Signed
Date

Please enclose a stamped addressed postcard if you require acknowledgement of safe receipt.
Valid until 31 May 1968
ALL AROUND the WORLD

aquarists praise the

DIAL-O-MATIC

THERMOSTATIC HEATER

The perfect
aquarium heater

* 

View of Control Head with Condensation Cover removed. Note the Neon Indicator and the Calibrated Control Dial affording immediate visual selection of temperature between 60° - 90°F. To prevent accidental alteration the dial is recessed and its movement requires the insertion of a ball-pen point into the cavity provided.

PRICE
47/0
(incl. P.T.)

100w 150w
10" 12"

* 

YOU CANNOT GO WRONG WITH 'Es-Es'

Es Es

- The natural choice of the discriminating
- The result of 30 years' experience from the originators of glass-based aquarium heaters
- A range of twenty first-class products to suit all pockets
- Products with those extra touches of craftsmanship - made to a high standard - safe to use - dependable - durable - different. All guaranteed

SINGLETON BROS. (Electronics) LTD.

TRURO HILL • PENRYN • CORNWALL

"I saw your advertisement in PFM"
YOU HAVE TRIED THE REMEDIES—
NOW TRY Vitakraft FISH FOODS

WILL NOT CLOUD WATER

ERIC WOODS (ROSEWOOD) LTD.,
ARLESTON, WELLINGTON, SHROPS.

Telephone: Wellington 2261/2

WHOLESALE  RETAIL

BONNER AQUARIA
19 BONNER STREET
BETHNAL GREEN
LONDON E.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.

"COLLEY" SYPHON PUMP
- Made from high grade polyethylene
- Pumps or syphons
- Acids, alkalies or any liquid
- Capacity 7 pints per minute
- Efficient and durable

ONLY 6/9 EACH

Order from your local dealer
List of wholesalers & leaflet from sole importers:
COLLEY NOCKOLDS LTD.,
126, Spa Road, London, S.E.16

Please mention PFM when writing to advertisers
TRONLEY ENTERPRISES LTD.

IMPORTERS & EXPORTERS

OF

TROPICAL FISH — MARINES AND FRESHWATER
COLDWATER FISH
MARINE INVERTEBRATES
PLANTS AND BULBS

Rarities our Speciality
PHONE 01-272 4692 FOR LISTS
WHOLESALE ENQUIRIES ONLY

Shipments arriving Twice Weekly
DAILY DESPATCHES BY RAIL AND AIR
LIVE ARRIVAL GUARANTEE

London Van Delivery Service

For Quality — BUY TRONLEY

OPEN ALL HOURS

36 PARK AVENUE, LONDON N.13
47 FONTHILL ROAD, LONDON N.4
# Books by post for the fish-keeper

## TROPICAL FISH
- **All about Tropical Fish**
  - by Derek McInerny and Geoffrey Gerard
  - 85s (post 3s 6d)
- **Breeding Aquarium Fish**
  - by Wolfgang Winkler
  - 10s 6d (post 7d)
- **Freshwater Fishes of the World**
  - by Günther Sterba
  - 90s (post 4s 6d)
- **Guide to Tropical Fishkeeping**
  - by J. H. P. Bryner
  - 50s (post 1s 6d)
- **Tropical Fish in the Aquarium**
  - by J. M. Lodewijks
  - 18s (post 1d)
- **Tropical Fish**
  - by Derek McInerny
  - 5s (post 8d)

## WATER PLANTS
- **A Manual of Aquarium Plants**
  - by C. D. Roe
  - 27s 6d (post 1s 6d)
- **Aquarium Plants**
  - by H. C. D. de Wit
  - 35s (post 1s 3d)
- **Aquarium Plants**
  - by Gerhard Brunner
  - 10s 6d (post 7d)
- **Encyclopedia of Water Plants**
  - by Jiří Stodola
  - 75s (post 3s)

## COLDWATER FISH AND PONDS
- **Aquatic Insects**
  - by John Clegg
  - 1s 6d (post 3d)
- **Garden Ponds**
  - by Arthur Boarder
  - 5s (post 8d)
- **Goldfish**
  - by Anthony Evans
  - 5s (post 8d)
- **The Water Garden**
  - by H. C. Witham Fogg
  - 5s (post 8d)

## MARINES
- **The Marine Aquarium**
  - by Wolfgang Winkler
  - 10s 6d (post 7d)
- **Salt-water Aquarium Fish**
  - by H. R. Axelrod and W. Vorderwinkler
  - 65s (post 1s 6d)
- **The Salt-water Aquarium in the Home**
  - by R. P. L. Straughan
  - 55s (post 1s 3d)

## GENERAL
- **Aquariums**
  - by Anthony Evans
  - 5s (post 8d)
- **Aquarium Care**
  - by Günther Sterba
  - 70s (post 3s 6d)
- **Aquarium Hygiene**
  - by Hellmuth Wachtel
  - 10s 6d (post 7d)
- **Aquarium Techniques I and II**
  - by A. O. Janze
  - each part 12s 6d (post 9d)
- **Diseases of Aquarium Fish**
  - by Gottfried Schubert
  - 10s 6d (post 7d)
- **Diseases of Fishes**
  - by C. van Duijn Jr.
  - 47s 6d (post 2s 6d)
- **Food for the Aquarium and Vivarium**
  - by Willy Jocher
  - 10s 6d (post 7d)
- **Planning and Decorating the Aquarium**
  - by Wilfried Welgel
  - 10s 6d (post 7d)
- **The Complete Aquarium**
  - by D. Vogt and H. Wermuth
  - 25s (post 1s 3d)
- **Electricity in Your Aquarium**
  - by L. Warburton
  - 2s 6d

---

**PetFish**

554 GARRATT LANE LONDON S.W.17  
 Phone 01-947 2805

Please mention PFM when writing to advertisers

---

Any aquarium book in print supplied on request

When ordering please indicate your name and address clearly and enclose remittance.
The answer to perfect aeration and filtration

THE PREMIER BIOLOGICAL FILTER

Acclaimed by leading aquarists to be the best method of filtration. Once installed in an aquarium it can satisfactorily be left without any attention for years—no filtering medium is required. Can be operated by any type aerator.

FIT ONE NOW AND ENJOY A TROUBLE FREE TANK

- BETTER CIRCULATION
  The PREMIER BIOLOGICAL FILTER collects water from the bottom and recirculates it. No cold spots—fish will even feed at gravel level.

- HEAT ECONOMY
  Continuous circulation of heat provides desired temperature evenly throughout aquarium, saving in current is noticeable.

- PLANT GROWTH
  Filtration through gravel ensure more healthy roots and prevents rotting away.

- WATER CLARITY
  The PREMIER BIOLOGICAL FILTER keeps tanks suspension free, always crystal clear water.

- NO MESS
  No filter mediums to change provides a cleaner job and saves money spent on replacement of mediums. Completely eliminates need for syphoning and prevents black gravel.

- NEATNESS
  The PREMIER BIOLOGICAL FILTER is fitted beneath the gravel, only air lift is visible. Once installed can be left for years—will not clog up.

Made for 18" tanks at 12/6 each, 24" tanks at 15/- each. Other sizes see fitting chart on filter box

Manufactured by . . .

WINDMILL PRODUCTS
244, VAUXHALL BRIDGE ROAD, LONDON, S.W.I.
Telephone: VICtoria 5179

"I saw your advertisement in PFM"
The answer to perfect aeration and filtration

NO MORE CLOUDY TANKS
NATURE'S OWN METHOD OF FILTRATION
RELIABLE AND PERMANENT

THE PREMIER BIOLOGICAL FILTER

Acclaimed by leading aquarists to be the best method of filtration. Once installed in an aquarium it can satisfactorily be left without any attention for years—no filtering medium is required. Can be operated by any type aerator.

FIT ONE NOW AND ENJOY A TROUBLE FREE TANK

- BETTER CIRCULATION
  The PREMIER BIOLOGICAL FILTER collects water from the bottom and recirculates it. No cold spots—fish will even feed at gravel level.

- HEAT ECONOMY
  Continuous circulation of water provides desired temperature evenly throughout aquarium, saving in current is noticeable.

- PLANT GROWTH
  Filtration through gravel ensure more healthy roots and prevents rotting away.

- WATER CLARITY
  The PREMIER BIOLOGICAL FILTER keeps tanks suspension free, always crystal clear water.

- NO MESS
  No filter mediums to change provides a cleaner job and saves money spent on replacement of mediums. Completely eliminates need for syphoning and prevents black gravel.

- NEATNESS
  The PREMIER BIOLOGICAL FILTER is fitted beneath the gravel, only air lift is visible. Once installed can be left for years—will not clog up.

Made for 18" tanks at 12/6 each, 24" tanks at 15/- each. Other sizes see fitting chart on filter box

Manufactured by...

WINDMILL PRODUCTS
244, VAUXHALL BRIDGE ROAD, LONDON, S.W.1.
Telephone: VICtoria 5179

"I saw your advertisement in PFM"
TetraMin

PRODUCED BY SPECIALISTS WHO ARE DEVOTING THEIR LIVES TO FISH

It has taken years of research and development by people who really understand and care about fish to produce TetraMin, the safe, tested, reliable fish food. This knowledge and experience is what you are buying with every pack of TetraMin. Knowledge that your fish are getting the right food, carefully balanced nutrients that are easily digestible, food to make them livelier and live longer. Don’t be misled by similar products or substitutes—there have been imitators, and no doubt other imitators will come along. Only by insisting on TetraMin can you be certain of the quality and purity that you want for your fish. See your aquarist or pet shop and ask for TetraMin.

YOUR FISH PLAY SAFE WITH TetraMin

Ask your stockist for our free Feeding, Care and Temperature Table, or send self-addressed, stamped envelope to:
HERB-ROYAL LIMITED - (TetraMin DIVISION) - COLLEY LANE ESTATE - BRIDGWATER - SOMERSET

PRINTED BY ADLARD & SON, LTD., BARTHOLOMEW PRESS, DORKING