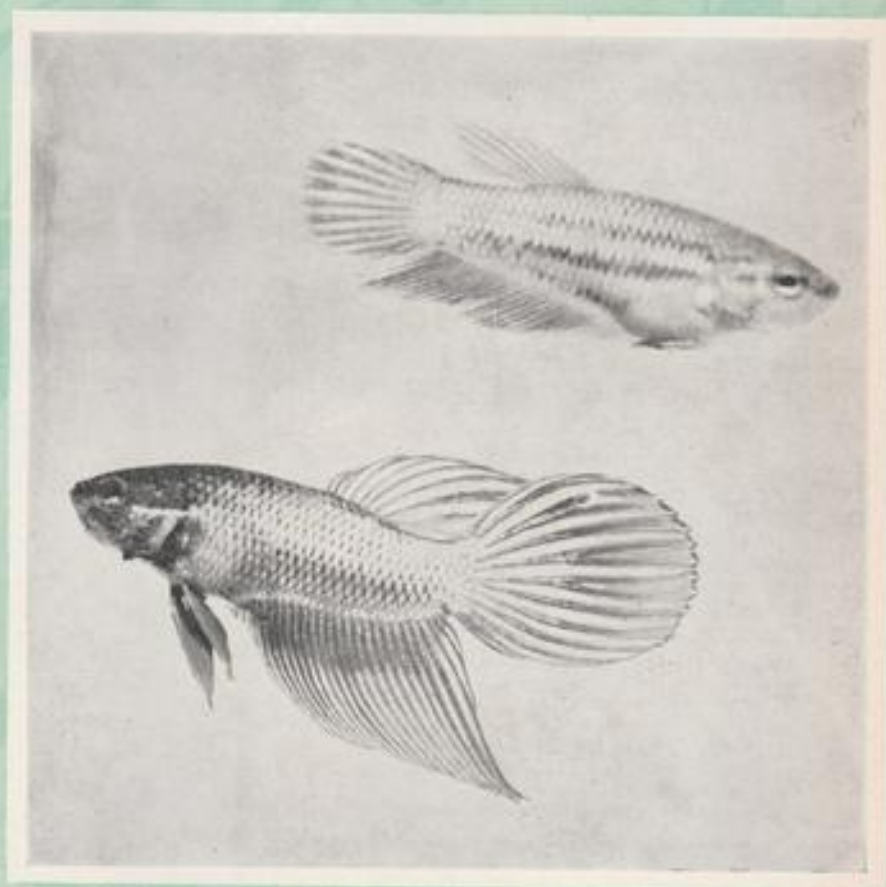


# The Aquarist

and Pondkeeper

JANUARY 1965



MONTHLY  
Vol. XXIX No. 10

**TWO SHILLINGS**

## WALTER R. SMITH LTD.

For Complete Tropical and Coldwater  
Aquaria also Tropical Marine  
100 Varieties of fish usually in stock on view  
in 76 polished stainless steel aquariums

POLISHED STAINLESS STEEL		
	Frames	Aquariums
24 x 15 x 12	£ 7 7 0	£ 9 9 0
30 x 15 x 12	£ 8 8 0	£ 11 11 0
36½ x 15 x 12	£ 10 10 0	£ 13 13 0
48 x 15 x 12	£ 13 13 0	£ 21 0 0

### DISTRIBUTOR OF—

- McLYNN'S FISH FOOD
- ES-ES PRODUCTS
- ELECTRICAL AND GENERAL
- WATER LIFE, AQUARIST, DITCHFIELD'S AND T.F.H. BOOKLETS
- REJECTORS, SEDIJETS, AND MAINTENANCE EQUIPMENT
- PROCKTER, SUMMIT AND STAR PUMPS
- CONSTAT THERMOSTATS
- AQUAFERN AND COLORFERN PRODUCTS
- HYFLO PRODUCTS
- LIVERINE PRODUCTS
- STOKES FOUNTAINS
- WINDMILL PRODUCTS
- ROCK GRAVEL AND STRATA ROCK WORK
- STUDENTS' MICROSCOPES
- ALL FEEDING AND AERATING APPLIANCES
- MERCURY, SPIRIT AND DUMPY THERMOMETERS
- STUART TURNER WATER PUMPS
- ZOUBEKO AND BIKO PUMPS
- VI-FIT FISH FOOD
- BLACK MAGIC GLAZING COMPOUND
- GLASTICON '303' AQUARIUM SEALER
- AQUAMASTA GLAZING COMPOUND
- LIQUIFRY AND INTER-PET PRODUCTS
- FIBRE GLASS PONDS
- OTTER WATERFALL AND FOUNTAIN KITS

Angle Iron Aquariums, Frames and Stands a speciality.  
Odd sizes made to order, painted any colour, guaranteed square and free from welds. Stove enamelled Corner Bows, Bow Fronts and Wrought Iron Units.  
Half Carriage Paid on these items.

Retail Price List 6d Inc. Postage  
Wholesale List to Bone-fide Traders on application

## WALTER R. SMITH LTD.

39 Tib Street and 16 Whittle Street  
(Off Tib Street)

Manchester 4

Telephone : Deansgate 2941 and 2528

## M. & R. (DOG-FISH) LTD.

presents



Over 120 varieties including Marine Tropicals on show and for sale. We are Direct Importers of Tropical Fish. Decorate your tank with 2,000 year old wood—stocked only by us. Fish for personal shoppers only.

466 PAISLEY ROAD WEST, GLASGOW, S.W.1

Telephone: IBROX 3615 Open Sundays 11 a.m.—2 p.m.



## PHILLIPS fish food

Fine Grade for Tropicals and  
Coarse Grade for Gold-water Fish\*



Extra high in protein and rich in vitamins and minerals, Phillips Fish Food contains dried shrimp, daphnia, meat meal, white fish meal, alfalfa, milk powder, cod liver oil, wheaten cereal and yeast, scientifically blended to provide a well-balanced, nourishing food.

For all Cold-water Fish - - 1/9d  
For Tropicals - - 1/6d



\*Phillips Cold-water Fish Food contains  
**SAPROLEGNIL**  
to protect against the ravages of "cotton wool" fungus.

PHILLIPS YEAST PRODUCTS LIMITED, Park Royal, London N.W.10





**The Food for...**

**Top Condition... Maximum Growth**

**BIOL**

PURE DRIED  
PLANKTON



Microscopic examination of  
BIOL Plankton - x 250 approx.

- ★ Feed in place of Live Food!
- ★ The ideal follow-on for Liquifry—the first food for baby fish.
- ★ BIOL . . . Growth food for young fish.
- ★ BIOL . . . Conditioning food for adult fish.

Standard size, 2/6d. for 7 grams.

Breeders' Pack, 5/3d. for 28 grams.

**For the Best Start... LIQUIFRY** THE TUBED LIQUID FRY FOOD

- ★ Recommended in the February *Aquarist* by Mr. A. Boarder and Mr. A. van den Nieuwenhuizen.
- ★ Contains minute food particles and particles to produce infusoria in the minimum possible time.
- ★ A FEW DROPS A DAY IS THE LIQUIFRY WAY!

**Liquifry No. 1**  
(Red tube) for egg-layer fry.

**Liquifry No. 2**  
(Green tube) for baby livebearers, contains in addition green vegetable matter.

Price 2/6d. per tube

Start your Baby Fish on **Liquifry** and watch them grow!

**For Fungus and Finrot... LIQUITOX** THE PROVEN SPECIFIC

- ★ Colourless—Effective—Does not harm the plants.
- ★ Definite dosage given by ingenious chart.

Price 1s. 9d. per carton of 2 capsules. Breeders pack 6s. 9d. per 12 capsules.  
Each capsule will treat 4 gallons of aquarium water.

Available through your dealer or post free from the

**Inter-Pet Supplies Company**

18 Church Street, Dorking, Surrey

Tel. Dorking 2566

Sales Division of the  
Liquifry Company Limited

Please send for our new catalogue.

*Why do the largest Tropical Fish Breeders in Europe  
and all over the world use*

## **Tetra Min Fish Foods**



Because they see positive results in their fishes.

Because of its many and varied ingredients (over 30).

Because the tender flakes (6 different varieties in Tetra Min STAPLE FOOD) contain microscopic particles of high value protein and fat, assuring full and easy digestion and good nourishment.

Because Tetra Min never clouds water.

There are many more reasons for feeding your fish on Tetra Min Foods.

Tell us, why don't you use Tetra Min!

# **TETRACRAFT LIMITED**

11 STATION ROAD · MARLOW · BUCKS

**SPECIAL PLANT OFFERS**

**OFFER No. 1**

2 Wistaria	5/-
1 Aponogetum	4/-
1 Nymphaea Stellata	5/-
6 Sagittaria Natans	4/6
1 Cryptocoryne Haerthiana	3/6
3 Micro Sagittaria	1/6
<i>Yours for 10/-</i>	
	23/6

**OFFER No. 2**

50 Assorted Tropical Plants including—  
Dwarf Lily, Aponogetum Cryptocoryne, Wistaria.

*Yours for 20/-*

**OFFER No. 3**

30 Assorted Tropical Plants ... 10/-

**OFFER No. 4**

30 Assorted Coldwater Plants ... 10/-

**EXTRA SPECIAL**

Water Lettuce, very beautiful plants ... 2/6

**SPECIAL SERVICE**

Live Daphnia by post ... 2/- including postage

**BOW-FRONTED AQUARIUMS**

6in. x 12in. x 15in. bow-fronted aquarium with wrought iron bookcase stand £19/19/- complete.

48in. x 12in. x 15in. — 29 gns.

*Available in penny bronze, black & gold, and cream*

**WITH PLAIN STAND**

Inches 48 x 10 x 15	£22.15.0
" 36 x 12 x 15	£15.15.0
" 24 x 12 x 15	£12.10.0

Complete with Stand and Hood (15in. to centre of bow)

All Standard Sizes of Aquaria in Stock. Any shape or size made to Customers' Specifications. Installations a Speciality.

**STANDS**

18 x 10 x 36	37/6
24 x 12 x 36	47/6
30 x 12 x 36	52/6
36 x 12 x 36	57/6

**REMEDIES, etc.**

Aquasonic	3/6	Halamid	3/6
Brosiam White Spot Cure	2/-	Liquor	1/9
Vivo Salts	2/-	Dioxasolve	2/6
Sea Salt	1/6	Brosiam Fertilizing Tablets	1/6
Tetracox all 4/6 each			

**THERMOSTATS**

Constat External	33/-
Constat New External Type QK	25/-
UNO	
Out/Adj.	18/-
Ins./Adj.	15/-
Ins./Adj. "Popular"	10/-
"Popular" with neon indicator	12/6
Rema (with Neon)	21/-
"Ea-Ea" Sentinel	26/6
Springfield Safety	25/-

**THERMOMETERS**

Mercury	each
Gem	6/6
Plastic Backed	6/6
Swift Blue Neon	5/-
"Ea-Ea" Dummy	6/6

**FILTERS**

"Windmill" Plastic Outside Filter	19/6
"Windmill" Biological Aquarium Filter 12/6, 15/-	
"Windmill" Regent Inside Filter	18/-
Corner Filter	6/-
Air Lift	2/6
"Slim Jim" Outside Filter	17/6
"Klear King" Outside Filter	22/6
Bottom Filter	8/3
Ornamental Rock Filter	17/6
Uno Polyfilter	3/6

**AERATORS & PISTON PUMPS**

Meotroue	each
Fairy	21/-
Star	24/-
Rea	27/6
Zoobeka Total	36/-
Hy-do Junior	50/-
Hy-do "A"	75/-
Hy-do "B"	107/6
Hy-do "C"	130/-
Hy-do "D"	165/-
Hy-do "E"	250/-

**HEATERS**

"QUEENSBOROUGH" 25w., 40w., 60w., 75w., 100w., 120w., 150w.	each
Rena (75-200w.)	10/-
"Ea-Ea" Flexible Heaters (100w. and 150w.)	19/-
"Ea-Ea" Thermostatic Heaters, 100w. and 150w.	36/-
Proset-matic	24/6
Inter-Pet Thermostatic Heater 22/6 and 29/6	
Heater Holders	2/-

**BACKING PAPERS STRATA ROCKWORK**

**PEBBLE BEACH SEA & SHORE**

24in. long x 20in. high, 2/6 per sheet, or 1/3 per foot. (post free)

**SEDIMENT REMOVERS**

"Windmill" Air Ejectors	each
"Windmill" Hand Ejectors	19/-
Rejectors	15/-
Flairball	3/-
Syphon Tubing	7d. ft
Hand Type Plastic Swirl Away	4/6
	46/8

**PLANTS**

Fallisneria Spiralis	9d.
Elodea Densa	9d.
Hygrophila	9d.
Racopa	9d.
Sagittaria natans	9d.
Sagittaria micro	9d.
Fallisneria toria	9d.
Ludwigia	9d.
Myriophyllum	9d.
Cryptocoryne Beckwithii	2/-
"Wallo" 2/6 and 5/-	
"Condoza" 2/6 and 5/-	
"Heroniana" 2/6 and 5/-	
Water Wistaria	3/6
Giant Hygrophila	2/6
Giant Sagittaria	2/6
Najas Microdon	2/6
Amazon Chain Sword	2/6
Duckweed	per portion 1/-

**FOODS**

"Queensborough" Tropical Fish Food	1/6 and 2/6
Exotic Flakes	1/6
Hykro Flakes	1/-
Brosiam	1/6 and 2/6
Brosiam Frygrain	1/6
Brosiam Biovic 6d. and 1/6	
Liquify Nos. 1 and 2	2/6
Infosyl	2/6
Elise	2/- and 4/6
Dried Daphnia Our	6d.
Ground Shrimp	own 1/-
Fish Food	1/6
	in 3 sizes
Ants Eggs	6d.
Wardley's Treat Pac.	8/6
7 kinds of food	4/6
Hi-Glow	4/6
Glow Tabs	2/6
Biol	2/6
G. Bartmann	5/6
Foodax	3/-
Sopremix	2/6
Tetramis Flake (all sizes) 1/10, 3/-, 6/6,	
22/6 and 79/-	
Suregrow 1/- and 2/-	
(fly food)	1/3
Vitakraft 1/10, 6/9 and 22/6	

**FULLY-GLAZED AQUARIUMS**

Pressed Steel		Aluminium	
Inches	Tank H'd Refl.	Inches	Tank H'd Refl.
12 x 6 x 6	10/6	6 x 6	24 x 12 x 15 57/6 27/6 8/6
14 x 8 x 8	13/6	7 x 7	30 x 12 x 15 77/6 31/6
16 x 8 x 8	15/-	8 x 8	36 x 12 x 15 97/6 38/6
18 x 10 x 10	22/6 15/-	8 x 8	48 x 12 x 15 137/6
24 x 12 x 12	52/6 22/-	8 x 8	

**LIVE FOODS**

Brine Shrimp Eggs	2/6 and 4/6
Cultures of Neat Worm 1 oz.	7/6
" " 2 "	13/6
White Worm	3/-
Micro Worm	3/-
Tubifex worms	1/6 and 2/9

**BOOKS**

Tropical Fish in the Aquarium	17/6
Aquarium Plants	36/6
Freshwater Fishes of the World	84/-
Diseases of Fishes	15/6
All about Tropical Fish	77/-
Encyclopedia of Tropical Fishes	62/6
Electricity in your Aquarium	8/6
Illustrated Dictionary of Tropical Fish	67/6
Exotic Tropical Fishes 150/-	
All T.F.H. Books 2/- each	
The Book of the Garden Pond	16/6
A Manual of Aquarium Plants	17/6
	Postage included

**SUNDRIES**

Breeding Trap	15/-
Sockers Knob or Shank	4d.
"Double"	6d.
Planting Sticks	1/3
Dry Floating Rings	1/-
"Squares"	1/6
Hykro (4 in one) Feeder	2/3
Worm Floating Feeders	1/4
Worm Cradle with Socker	1/6
"Windmill" Diffuser	1/- to 1/6
"T" Piece	1/-
Aerator Tubing	
Rubber	...f. 4d.
Plastic	... 6d.
4 Way Piece	1/-
Clamps	1/-
Carbon	1/-
Glass Wool	1/2
Nylon Wool	1/4
Testing sets	18/6 and 8/6
	Post 1/9 extra
Hykro Leak Sealer	2/-

**CARRIAGE EXTRA**

Please add 1/- extra postage on appliance orders up to 10/-; 1/6 up to 20/-; 2/- up to 30/-.

**QUEENSBOROUGH FISHERIES**

111 GOLDHAWK ROAD, SHEPHERD'S BUSH, W.12  
(1/2 mile from Shepherd's Bush Market)  
Telephone: SHE 2730  
Hours of Business: MON. to SAT.— 9 a.m.-6.30 p.m. CLOSED THUR.

QUEENSBOROUGH HOUSE, Ferry Lane, Hythe End, Wraysbury, Nr. Staines  
Telephone: WRAYSBU 2885  
Sundays only from 10 a.m. to 4 p.m.

16 PICTON PLACE, LONDON, W.1  
(1/2 mile from Selfridges)  
Telephone: WELBECK 6438  
Hours of Business: MON. to FRI.— 9.30 a.m.-4 p.m. SAT. 9.30 a.m.-5 p.m.

ALL POSTAL ENQUIRIES TO GOLDHAWK ROAD ADDRESS

# The AQUARIST AND PONDKEEPER

Founded in 1924 as "The Amateur Aquarist"



VOL. XXIX No. 10

1965

THE BUTTS, HALF ACRE, BRENTFORD,  
MIDDLESEX

Telephone: ISLeworth 6221

PUBLISHED MONTHLY

SUBSCRIPTION RATES

The *Aquarist* will be sent post free for one year to any address for £1 8s. 0d. Half-yearly 14s. 0d. Canada, U.S.A. \$4.00 yearly; \$2.00 half-yearly.

### QUERIES

Postal replies are made to all specialised queries accompanied by a stamped, addressed envelope. This privilege is afforded only to registered readers and direct subscribers. Subscription forms can be obtained on application. In all cases letters should be addressed to the Editor.

Correspondence with intending contributors is welcomed.

MSS. or prints unaccompanied by a stamped, addressed envelope cannot be returned, and no responsibility is accepted for contributions submitted.

The Editor accepts no responsibility for views expressed by contributors.

## Contents

	Page
The Choice of Fishes and Plants .. ..	169
Fishes of the Genus <i>Mimagoniates</i> .. ..	170
A Mild-mannered Large Gourami .. ..	171
Java Moss .. ..	172
Begonia Rex .. ..	172
Purple-headed, Black Ruby or Nigger Barb ..	173
Breeding Habits of the Siamese Fighting Fish	174
The Pearl Danio .. ..	176
The Garden Pond in Winter .. ..	177
New Methods of Fishkeeping .. ..	178
Readers' Queries Answered .. ..	180
Our Readers Write .. ..	183
The <i>Aquarist</i> Crossword .. ..	185
News from Aquarium Societies .. ..	186

## The Choice of Fishes and Plants

WHEN the new aquarist has set up his aquarium he is inclined to rush into a dealer's shop and buy any plants or fishes which take his fancy. It is at this point that the beginner is most likely to waste money. Some advice can be given to prevent the purchase of fish and plants which may be unsuitable for his particular set-up. Possibly the local dealer is the best person from whom advice may be obtained, as although it is, naturally enough, the dealer's aim to sell his stock, he will not sell anything that could jeopardise future sales.

Considering plants first of all, it is well known to the experienced aquarist that it is almost impossible to predict which plants will thrive in any given aquarium. Two seemingly identical tanks in the same room will seldom support the same plant life, and one tank will even show different plants flourishing at different seasons. There are so many variable factors in such a small environment that it is often difficult to have control of all of them.

### Lighting and Plants

Light conditions, for example, vary with seasonal change, except in the tank which is kept in total darkness and has its supply of electric light exactly controlled. Different types of light bulbs and tubes may provide light whose wavelength is biased towards one or the other end of the spectrum, thus influencing plant growth. Another governing factor for plant growth is the quantity of dissolved gases and mineral salts in the water. As water evaporates from the tank, the concentration of dissolved mineral salts rises. Topping up with distilled water can deal with this problem, but it means purchasing quantities of distilled water, which can be bothersome. As an alternative, quantities of water can be siphoned from the tank and replaced with fresh tap water which has been allowed to stand for a while in an open container. It should be heated to the temperature of the aquarium water before being added. By boiling tap water its temporary hardness can be removed—the salts removed being deposited as scales inside the kettle used. The value of using the above measures to keep down the salt concentration is doubtful, as it might improve one tank's conditions, but could do the opposite in another, depending upon whether the fish and plants kept appreciate low or high concentrations of salts in their water.

Decomposing food and organic matter add to the mineral salt concentration. One of the available water testing

kits can give valuable information about reaction (pH) of the water.

Faced with such a prodigious list of variables, the beginner could not be blamed for wondering which plants his tank could support. It is here that money could be wasted on buying quantities of specific plants which might not flourish in the particular aquarium. Useful advice would be to purchase one of the bargain bundles of aquatic plants listed in *The Aquarist's* pages. These contain a number of varieties of plants at a reduced price, and after such a collection has been growing in the tank for some time, the aquarist can see which plants are suited, and purchase more of these specific sorts.

#### Which Fishes?

When choosing fishes the beginner usually does not realise what the small fishes on display will have grown into in a year or so, on a good diet. Two fishes which attract the beginner are the angel fish and the three-spot gourami. Neither of these fish I consider suitable for the

small tropical aquarium for the reason that they will soon grow too big, given suitable food. These fishes are usually purchased in pairs, and I have found that if one of the pair should die, the other one can, when it grows large, turn into a rogue fish which can terrorise a community tank of smaller tropicals. On a number of occasions I have found an adult angel or gourami to be the cause of smaller fishes losing their fins through fin nipping. If no alternative accommodation is available for the large fish, this usually means that they have to be destroyed or given to someone, and no fish lover wants to destroy a large healthy fish.

With his dealer's advice, and after some time, the beginner will see which of his choice of fish and plants suits his own particular aquarium. He can make any modifications which he then considers necessary. The result should be a balanced aquarium which should need a minimum of attention, and which should give a maximum of pleasure at a moderate price.

Billy Whiteside

---

## Fishes of the Genus *Mimagoniates*

by Dr R. O. B. LIST

**B**REEDING in fishes of the genus *Mimagoniates* is by an unusual procedure, unlike that of most other egg-laying tropicals. The male uses his anal fin to deposit a minute sperm package on to the region of the vent in the female. The sperm package permits the male seed to wriggle completely into the female vent on its own accord. The male shows no pronounced special adaptation of the anal fin, but it has a series of small hooks, visible only under a microscope. The hooks hold the male anal fin on to the female for the time required for the male to deposit the sperm package. This means of fertilisation has two distinct advantages: (1) one such fertilisation allows the female to lay completely fertile eggs for several months after, and often for the whole of the life span of the female; (2) by such a process no infertile eggs can ever be laid.

*Mimagoniates* species are suitable for community aquaria but they are not very hardy and extremely sensitive to changes in water temperature. The outside temperature limits are 72° to 77°F (22°-26°C).

They will take not only live food but also dry food, but with the latter will only feed when near the top surface or in mid-water. The mouth prevents the fish picking up food from the bottom.

Sexing is relatively simple. In the male the dorsal fin is pointed, and rounded in the female.

They prefer a large well stocked aquarium but the water should be somewhat shallow. It will therefore be necessary to use bog as well as true aquatic plants.

#### *Mimagoniates barberi*

Habitat: Argentina, South East Brazil and Paraguay.  
Family: Characin.  
Size: 1½-2 in. (4-5 cm.).  
Temperature: 72-77°F (22-26°C).

General colouring of this species is light brown with an

overall green sheen. The sides have a dark blue horizontal band, running from the eye to the caudal, broadening towards the rear with a metallic green line. The dorsal fin is yellow to orange and the caudal, anal and pelvic are of reddish hue. Eggs incubate in 2 to 3 days after spawning and very fine Infusoria must be the first food. The usual spawning is about 70 eggs.

#### *Mimagoniates microlepis*

Habitat: South Brazil.  
Family: Characin.  
Size: 2½-3 in. (6-8 cm.).  
Temperature: 72-77°F (22-26°C).

The word '*microlepis*' indicates 'small scales', and this species is sometimes known as the blue tetra. The general colour is a bluish silver. The back is brown and the belly white to light yellow. The sides have a broad bluish lateral band, extending from the head to the caudal, accompanied by a yellow line. The fins are of a yellow-greenish hue. The anal as well as the dorsal fin has a light blue outer margin and the dorsal also has a brown to orange line parallel to the outer margin. The lateral band is sometimes edged with a coppery red iridescent stripe.

A peculiarity of *M. microlepis* is the fullness of the upper edge of the lower half of the caudal fin of the male. There is no edging on the anal fin of the female.

Both species are sensitive to sudden changes in water temperature. They are quite lively in behaviour but *M. barberi* tend to hide very quickly when alarmed. Both species appear to be happier when kept in small shoals.

It has been considered that the young fry of *Mimagoniates* are difficult to rear after hatching, but one should not forget the small formation of their mouth. First foods, therefore, need to be tiny.



# A Mild-mannered Large Gourami



Snakeskin gourami (*Trichogaster pectoralis*)

by JACK HEMS

JUDGED simply as a community fish, the air-breathing snakeskin gourami, as *Trichogaster pectoralis* is commonly called, has all the qualities looked for in a tropical except one: its inordinate size. A full grown specimen may reach about 9 inches in length, but to offset this undoubted failing it has neither a quarrelsome nature nor boisterous habits. Even when mating time comes round its manners remain peaceful and dignified. How different from the three-spot gourami, the blue gourami and the opaline gourami, the males of which often become most wildly dashing and savage-natured towards their own mates as they mature.

In coloration *T. pectoralis* shades from dull olive green on the back through golden yellow on the flanks to silvery underparts. The sides are adorned with a brownish to blackish stripe that zig-zags its way from the pointed snout through the large black eye to the root of the tail, and which in turn is crossed by numerous backward slanting shadowy to blackish brown bars. The pectoral fins are drawn out into long, hair-fine antennae. The anal fin, spinous anteriorly, is long-based and markedly yellow. The short-based dorsal fin is longer and more pointed in the male than in the female.

In the wild *T. pectoralis* is found in South Vietnam, Thailand and the Malay Peninsula and, of course, it is necessary to maintain its tank at a temperature in the neighbourhood of 70°F (21°C) to 75°F (24°C), with a rise to 80°F (27°C) or thereabouts for breeding. But besides this basic requirement, it is liveliest and shows its colours best in sediment-free, slightly acid water well furnished with plants growing lushly under a bright top light.

It doesn't eat the plants, but it will spend a lot of time picking at the leaves to rid them of algae, which it likes and should have in its diet. For the rest, it should be given the regular dried foods and small living foods such

as *Daphnia*, midge larvae and white worms. Scraped lean meat, cooked or uncooked, makes a good substitute for live food. As an alternative to algae, Bemax, duckweed and shredded lettuce or minute portions of cooked green vegetable (spinach preferably) may be offered.

*T. pectoralis* breeds like the other gouramis mentioned above. The male assumes richer colours and blows a bubble nest at the surface of the water. If the female is ripe for spawning, a condition made easily apparent by her fuller sides, darker appearance and coquettish ways, she falls in with the male's inclinations and allows herself to be coaxed beneath the nest. There they embrace time and time again, during which hundreds of buoyant eggs are laid. If the eggs do not rise immediately in the water both sexes gather the slow-starters into their mouths and spit them out again into the nest. After spawning is over, more bubbles are tossed up to the nest to help sandwich the less secure eggs into position. In about 2 days the eggs hatch out and the fry can be seen quite clearly if you look up through the mass of froth towards a bright light.

Both sexes also share in the task of caring for the young in the larval stage. If some of the rapid developers leave the nest before they are strong enough to swim properly, the male or the female will see to it that they are returned to the nursery with the least possible delay.

In breeding the snakeskin gourami the following points must be observed. Firstly, the spawning tank should be on the large size, say, about 3 feet long. Depth of water is not all that important, but larger broods of quick growing fry usually result from hatching the eggs in water only about 8 inches deep. Jars of Infusoria should be got ready when spawning seems imminent because the fry will die like flies in the winter time if miniscule food is not available from the start of their lives. Infusoria or a manufactured fry food or, as a last resource, flour-fine

dried food, should be fed to the fry for about 2 or 3 weeks, after which most of them should be large enough to take tiny live food such as microworms, Grindal worms and so forth. A bottom-haunting peaceful catfish like *Corydoras aeneus* can be introduced into the tank after the fry become free-swimming to keep the floor clear of uneaten dried food. Do not make the mistake of introducing any snails into the tank to act as scavengers because they, or their descendants, will only eat the eggs of subsequent spawnings.

Another thing to remember is to keep the surface free of dust and other scum by drawing sheets of newspaper over it every other day; for a film of any sort on the water prevents the fry from taking their gulps of air. Of equal importance is a well-fitting cover to keep the warm, moist air in, and an even temperature of the water; for the fry are easily killed off by a rapid fluctuation of upper-level temperature, or definite chilling of the water.

The snakeskin gourami is as prolific as the three-spot and blue gouramis, and will spawn several times every year, usually from late spring to early autumn, if conditions are right.

---

## Java Moss

by LEBISTES

A TRUE aquatic moss which is decorative in appearance and ideally suited to the breeding tank for its egg- or fry-saving qualities ought, surely, to be welcome in any comfortable room temperature or tropical tank.

Such a moss is *Vesicularia dubyana*, which was first singled out for special study from a collection of plants sent from the Botanical Gardens in Bogor, Java, to the University of Vienna in the early 1930s. Seemingly the moss is not confined only to Java, but is found over quite a wide area of the East Indies.

To look at, Java moss bears a marked resemblance to our native willow moss (*Pontopsis antipyretica*), but is smaller leaved, brighter green, and much easier to establish in the aquarium. Like willow moss, it will, when given the means of doing so, attach itself to a rough-surfaced stone, or water-logged piece of wood and grow slowly, ever so slowly, upward in spreading masses towards the surface. Alternatively, pieces can be pushed into the compost where, in the course of time, they will form similar ascending growths.

Essentially, *V. dubyana* is a plant for still, clean water and a moderate light. In short, the tank to suit it must be free from swirling sediment, fierce aeration, glaring illumination, which would encourage smothering algae, and large, perpetually dashing fishes.

It is doing well in my own community tank stocked with small shoals of brightly coloured tetras, guppies and platys. The fine grit bottom is spread over a thin layer of previously well-soaked peat, and the water is as spotless-looking (without filtration) as one sometimes finds around the margins of a sedgy, undisturbed woodland pond or lake. The only other plants in the tank are a variety of *Cryptocoryne* and some water wisteria. These have been planted in sunken pots of pure yellow clay. The Java moss has already hidden the rims of the pots, and has created a most pleasing effect.

## HOUSE PLANTS FOR THE FISH HOUSE

### Begonia Rex



FEW plants can equal *Begonia rex* for adding a splash of colour to the fish house. These plants come in a variety of leaf colours, varying from reds and purples, through black, to pale yellowish greens and silvers.

*Begonia rex* is a plant which can tolerate low light conditions and this makes it an ideal subject for placing below the stands supporting rows of tanks in the fish house. When placed in these shady positions the plant grows towards the main source of illumination, and as the leaves reach maturity they get very large and the colours assume a glazed sheen. The fact that the leaves are positively phototropic—that is, they grow towards the light—means that the plant assumes a sort of lop-sided effect, with the advantage that it faces the light and thus full advantage of its coloured leaves can be taken. Another point is that the plant does not need to be turned towards the light weekly.

A minimum temperature of 55°F (12°C) in winter is necessary to keep the plant healthy, and the fish house should prove a suitable home. There are two main ways in which the plant may be propagated. The first is from seed, which usually costs about 2s. 6d. for a packet, which should produce a variety of leaf colours. Seed could be germinated on top of a tropical aquarium. The plant's flowers are rather insignificant and should be removed to prevent the plant from wasting its energies on seed and flower production. Secondly, plants growing in pots can be purchased and are increased from leaf cuttings. This is done by taking a large mature leaf, cutting off about four-fifths of the stem, making small cuts through the main leaf veins on the back with a razor blade, and laying the leaf flat on the surface of a seed pan containing a mixture of peat and sand. The leaf should be pegged down with pieces of bent wire, or with hair pins bent into a right-angled triangular shape. A small stone placed

*Continued on opposite page*

# Purple-headed, Black Ruby or Nigger Barb

by B. FRY

ONE of the handsomest, hardiest and best-behaved occupants for a community tank is *Barbus nigrofasciatus*, which is native to the shallow, weedy and overhung fresh waters of Ceylon. Although it is most often popularly referred to as the nigger barb, it is sometimes called, in this country and less often in America, the diamond barb, the black ruby and the purple-headed barb, the last being a literal translation of the appellation by which it is commonly called in Germany, namely the *Purpurkopfbarbe*.

The general colour of the male is greenish olive on the back, yellowish grey on the flanks, and silvery on the belly. Three broad black vertical bars adorn the flashing-scaled sides. A fourth bar extends across the head and through the gold-rimmed eyes to fade away on the throat. There is a flush of scarlet across the head, growing in intensity towards the snout. The dorsal, anal and ventral fins are black, and the caudal and pectoral fins are silvery clear. Normally, and age for age, the female is fuller-bodied than the male and her colours are considerably more subdued. Both sexes average about 2 in. in length.

When the male displays before the female, which he often does if the water is really clear, the aquarium is backed by dense thickets of plants, is brightly lit by sun or artificial means and has a temperature in the neighbourhood of 77°F (25°C), the anterior part of his body glows like a hot, draught-whipped coal, and his black markings become even more pronounced and, on the upper sides and back, show flecks of green and gold.

Feeding the nigger barb presents no difficulties, for it is omnivorous by nature, but requires a proportion of live and flesh food and algae (or a suitable substitute such as cooked spinach) in its diet if it is to be kept in robust health.

The nigger barb will not pick on the other fishes in a community aquarium unless they are small enough to be mistaken for something extra special in the way of live food, will not uproot or denude the higher plants of their foliage, or hide itself away for what may seem like hours on end, but it will wage war to the death on snails, especially those with long, waving antennae, such as *Bullinus* and *Planorbis*.

Breeding procedure follows the typical *Barbus* pattern, the male intensifying his colours and chasing the egg-swollen female in and out of the plant life. Every now and again there are momentary pauses during which the couple engage in what looks like the opening movements of a wrestling match. Sometimes eggs are released while the circling movements are going on, sometimes the chase just continues without any eggs being laid until such times as the female is driven at or into the plants. The eggs are adhesive, and to trap them plants with fuzzy or mossy foliage are recommended. The tank for spawning should not measure less than 2 ft. in length. The temperature should be maintained at about 80°F (27°C).

Directly spawning is over the parent fish should be removed to another tank. The fry emerge from the eggs in about 3 days, but do not begin to swim about freely until another 48 hours have passed. This quiescent period is



taken up with absorbing the yolk sac. When they have done this, and are seen to be moving jerkily across the floor of their aquarium as if searching for something (something to eat, of course), then it is time to introduce food.

Infusoria is their best baby diet, and enough of these microscopical form of life should be fed to them every day to keep their silvery bellies rotund and shining. As they become big enough to take other food, provide tiny water fleas, brine shrimps, Grindal worms or mashed white worms or newly hatched midge larvae. Powdered dried food may be given them as a substitute for live food, but, naturally, the best results are obtainable only with the former. Generally speaking, the youngsters reach full size in 9 months to a year.

The species has a life span of between 3 and 4 years and can stand a slow drop in the temperature to 65°F (16°C) with no ill-effects. This is not all. It is a very prolific fish and will breed several times every year.

---

## Begonia Rex

(continued from page 172)

on top of each cut will serve the same purpose, by keeping the cuts in contact with the compost. The pan is kept fairly moist, without being wet enough to cause the leaf to rot before rooting. Cover the pan with a sheet of glass and turn this daily to prevent drops of moisture from falling on the leaf. A warm, light spot will hasten rooting.

In a few weeks roots will have formed at the cuts, and these will soon be followed by small plantlets which can be removed and potted into John Innes potting compost no. 1, when large enough.

One particular variety of *Begonia rex*, Iron Cross, has very attractive dark cross-like markings on its hairy pale green leaves, and these contrast well with the reds and silvers of other varieties. All kinds need a fair amount of water in summer, but should be kept nearly dry in winter. Excess of water will cause the plant to rot at its base, and drips falling on the leaves can cause spots to decay. An occasional feed of a balanced liquid fertiliser in summer will help to bring out the full colour of the plant's leaves.

Perhaps the coleus is the only plant which can approach the rex begonia for leaf colour. If you want to add an extra splash of colour to your fish house, at floor level, several of these plants will be a worthwhile investment, and more plants can easily be propagated from leaf cuttings by the method explained above.

B. Whiteside

# Breeding Habits of the Siamese

by

Photographs



MUCH has been said and written about this little jewel among our tropical aquarium fishes throughout the years. *Betta splendens* is frequently being spawned and raised under a great many different conditions and, of course, every aquarist who was ever successful in raising this fish considers his method the best. The following is a brief attempt to bring together past experiences with *Betta* obtained by myself as well as by many others, with the intention to furnish some basic guidelines for future breeding attempts by other aquarists.

Breeding behaviour in general resembles that of most of the other anabantids. There are no special requirements as far as the breeding tank is concerned, yet I would certainly not recommend a tank of less than 10 gallons, since this might create a problem of overcrowding once the anticipated young have hatched. One should always bear in mind that one female, depending upon her size and age, can produce between 200 and 700 eggs per spawning, and the average number of fully developed fish in a successful spawning normally ranges from 400 to 500 fish. The bigger the tank the smaller are the problems later on.

If one insists on a nicely decorated tank (I found it very inconvenient to have a breeding tank in the living room!) it should not be cluttered up with unnecessary obstacles such as large rocks etc. Select a medium grain sand for the bottom. Do not use coarse gravel since the baby fish during their early age can easily be trapped in it. As for the plants, anything will suffice as long as you include some floating plants like floating water sprite (*Ceratopteris*), *Salvinia* or even *Azolla* to provide support for the anticipated bubble nest. Specific water conditions for the successful breeding of *Betta splendens* are not of any importance. This fish has been raised in many extremes, thus no particular attention is necessary. Water tempera-



Above, male fighter below his bubble nest; left, from the top downwards are shown successive views of the spawning embrace of male and female

# Breeding Habits of the Siamese

by

Photographs



MUCH has been said and written about this little jewel among our tropical aquarium fishes throughout the years. *Betta splendens* is frequently being spawned and raised under a great many different conditions and, of course, every aquarist who was ever successful in raising this fish considers his method the best. The following is a brief attempt to bring together past experiences with *Betta* obtained by myself as well as by many others, with the intention to furnish some basic guidelines for future breeding attempts by other aquarists.

Breeding behaviour in general resembles that of most of the other anabantids. There are no special requirements as far as the breeding tank is concerned, yet I would certainly not recommend a tank of less than 10 gallons, since this might create a problem of overcrowding once the anticipated young have hatched. One should always bear in mind that one female, depending upon her size and age, can produce between 200 and 700 eggs per spawning, and the average number of fully developed fish in a successful spawning normally ranges from 400 to 500 fish. The bigger the tank the smaller are the problems later on.

If one insists on a nicely decorated tank (I found it very inconvenient to have a breeding tank in the living room!) it should not be cluttered up with unnecessary obstacles such as large rocks etc. Select a medium grain sand for the bottom. Do not use coarse gravel since the baby fish during their early age can easily be trapped in it. As for the plants, anything will suffice as long as you include some floating plants like floating water sprite (*Ceratopteris*), *Salvinia* or even *Azolla* to provide support for the anticipated bubble nest. Specific water conditions for the successful breeding of *Betta splendens* are not of any importance. This fish has been raised in many extremes, thus no particular attention is necessary. Water tempera-



Above, male fighter below his bubble nest; left, from the top downwards are shown successive views of the spawning embrace of male and female

# Fighting Fish

ERIC FRIESE

by the author

tures should remain constant between 80° and 85°F (26-29°C).

Select a nice, healthy and strong looking pair for breeding. Considerations for certain colour variations are secondary. Normally, the offspring of one pair of *Betta* shine in all colours of the rainbow, with one colour having a slight predominance and present to some degree in the majority of the young. This dominating colour can be quite different from that of both parent fish.

As soon as your tank is set and ready to go you may introduce the male *Betta*. The female should be kept separate. Under normal conditions in the next day or so the male should start building his bubble nest. If he fails to do so some encouragement should be given by transferring the female to a small jam jar suspended in the tank where the male is. This little trick has always worked wonders on my reluctant *Betta* males. As soon as he can see the female he normally does not waste any time and starts building the nest without delay. If for some strange reason this should not work then the female may be introduced to the tank. However, being exposed to the often rather vicious attacks and courting manoeuvres of the male the female is seriously in danger of becoming badly torn up or even killed. If both fish are together the pair should be constantly watched to prevent any fatalities. If all goes well, the nest is built and the female has put on enough roe, the spawning will commence. Graceful embraces occur and the eggs are extruded in small batches by the female and immediately fertilised by the male. This ceremony takes place right underneath the bubble nest, and since the eggs are not buoyant they sink slowly towards the bottom. However, male and female go after these eggs immediately, pick them up in their mouths and spit them into the bubble nest. The eggs are held in the nest partly by capillary attraction and partly by the viscosity of the nest. This egg-carrying 'service' is continued until the entire spawning act is completed. Now the role of the female has ended, and to avoid any family arguments she should be removed



Two male fighters in combat. The ragged fins have been produced by their vicious attacks on one another



from the tank. The male resumes all parental responsibilities. The nest is closely guarded and if an occasional egg should drop out of the nest it is returned by the male.

The incubation period is remarkably short, requiring only 30 to 40 hours at the above-mentioned temperature. The newly hatched fish remain in the nest until the yolk sacs are absorbed and the fins have developed. This is normally completed in about 3 days after the hatching. At that time the young *Betta* start swarming out of the nest. To prevent any possibilities of cannibalism on the part of the male, he should be removed from the tank at this time. About 72 hours after hatching minute food in the form of *Infusoria* should be offered. After about a

*Continued at foot of next page*



Keeping young male fighters in jars close together produces specimens with fine large finnage

# The Pearl Danio (*Brachydanio albolineatus*)

by JACK HEMS

**A**DMIRED alike for its delicate beauty, peaceful habits, ceaseless activity and hardiness, the pearl danio or opalescent fish, technically known as *Brachydanio albolineatus*, has remained a firm favourite ever since it was first introduced to tropical aquarium keepers about 50 years ago. It is found in the wild in standing and fast-moving fresh waters in Further India, Burma and Sumatra and attains about 2½ in. in length.

The general colour is shining gun-metal blue to violet overlaid with a shell-pink to greenish iridescence which melts imperceptibly into pearly white flushed with pink on the underparts. A magenta red stripe, coloured green to gold along its edges, extends from roughly the middle of the body to the bifurcation of the caudal fin. This is yellowish green, as are the other fins, though a faint to pronounced reddish tinge is present in their bases. Small, hair-fine barbels are present on the mouth. Sexing mature fish is easy because the female is fuller-bodied and deeper-bellied than the male, and her colours are never quite as bright.

*B. albolineatus* thrives best in a well-lighted aquarium maintained at a temperature range of 72°F (22°C) to 75°F (24°C), but a gradual drop to the middle sixties (°F), or a slow rise to the eighties (°F) will be attended with no ill-effects. Nevertheless, it is asking for trouble to subject this fish to extremes of temperature for any length of time.

Like most lively fishes, *B. albolineatus* is always ready for food, and in this it is easy to please; for anything alive or dried will be accepted with relish. It should be stressed, however, that live food such as *Daphnia* or midge larvae, combined with separation of the sexes over a period of a week or so, cannot be bettered for bringing a pair into breeding condition. This condition, it seems hardly necessary to say, is clearly recognised by the male's enhanced colours and extra liveliness, and the female's distended abdomen and sides.

As a sexually excited male is a most enthusiastic driver, the tank destined for spawning a pair should measure at least 18 in. long. Obviously, unless it is the intention of the breeder to transfer some of the post-larval fry to another tank for growing on, then the larger the spawning tank the better. For with plenty of swimming space and the right sort of food in clean, well-oxygenated water, it is possible to coax the youngsters along to a saleable size in the proverbial no time.

At this point, however, it is necessary to draw attention to the fact that the pearl danio is an avid eater of its own eggs. Therefore it falls to the aquarist to devise some method of protecting them from the parent fish. The most natural method that comes to mind is to carpet the floor of the tank with a tangled mass of weighted-down, fine-foliaged vegetation into which the eggs will fall. But a surer aid to success is a perforated plastic sheet cut to fit inside the aquarium like a false floor, and raised just off the bottom on stones. Shallow water, too, not more than 5 in. deep over the protection given, is essential. For in a greater depth the fish are likely to take quite a heavy toll of the eggs before they fall to safety. It is recommended to introduce the conditioned fish into the prepared tank last thing at night, for then you can be almost certain that they

will spawn the following morning or afternoon. Returning to the actual spawning for a moment, many breeders mate two males to a female to ensure a high percentage of fertile eggs.

When spawning is over (a spawned-out female looks thin and tattered in appearance) the parent fish should be removed from the tank. If a perforated screen has been used to save the eggs, this should be lifted out. But plants, or a floor covering of glass marbler (which some successful breeders prefer to defeat the spawners' cannibalistic intentions), can remain where they are.

As a rule, the rather large eggs incubate before 2 days are out, but the fry, which at first adhere to the plants, the glass floor, or the sides of the tank, do not become free-swimming until they have absorbed the nourishment contained in the abdominal yolk sac. This takes about another couple of days, then the fry strike out in all directions in search of microscopically small food.

Without question the least trouble-free and most growth-promoting first food is Infusoria. But if this is not available and flour-fine dried food is used as an alternative, do take care not to introduce too much of it at a time or else pollution, with its attendant dangers, will set in. Should you be away from home most of the day, a siphon-type drip-feeder for Infusoria (or a liquid fry food which can be purchased from your dealer) is quite easy to rig up above the surface of the water. Larger food such as Grindal worms should follow on as a matter of course. That is, as soon as the fry are large enough to take it.

Assuming that all goes well, the fry should measure about 1 in. long within the space of a month, and be ready to breed themselves at the age of 6 months. Like all rapid developers and extremely active livers, the pearl danio is past its prime for breeding at about 18 months. Its life-expectancy is about 2½ years.

## Siamese Fighting Fish

(continued from the preceding page)

week brine shrimp (*Artemia salina*) nauplii will be taken, and from there on no further difficulties in raising the young *Betta* should arise.

The labyrinth organ forms in the young *Betta* about 3 to 4 weeks after they hatch. During this time excessive fluctuation in the water temperature should be avoided, since the young fish are somewhat sensitive to low temperatures. The "fighting spirit" in the young *Betta* males develops rather early, and individual males should be separated after about 2 months, preferably in small jam jars standing next to each other, so that the males can grow good finnage by being constantly excited.

*Betta splendens* thrives equally well on dried food as on live food, but frequent live food feedings, especially with mosquito larvae, seem to promote better and more intense colours. This fish is a rather prolific species, and a female can spawn again after about 4 to 5 weeks, and can thus produce 5,000 or more eggs annually.

# The Garden Pond in Winter

by A. BOARDER

**T**HERE is very little work to be done to the garden pond in winter if the annual cleaning out has been carried out properly, but trouble might come if the pond freezes over fairly thickly.

Some pondkeepers will tell you that they never break the ice at all but leave everything to nature. This policy may be all right but so much depends on the condition of the water. The type of pond can have an important bearing on whether to open the ice or not. Any large pond with a natural or clay bottom will be safer than a concrete one when severe frost occurs. When water freezes there is considerable expansion and the forming ice can exert considerable pressure. If fishes are present they could become injured or killed by this pressure.

The concrete pond cannot expand with the ice as would the surrounds of a natural pond and so it is more important to open the ice on the concrete pond to relieve the pressure. However, the opening of part of the ice for this purpose is not the only reason for this. The most important point to consider is that the water may have become foul. If a medium sized concrete pond has not been cleaned out during the late autumn, then the water may well be very foul through the decomposition of fallen leaves and decaying vegetation. This decaying matter produces foul gases and once the pond freezes over these foul gases cannot escape from the pond. In addition the fresh oxygen cannot enter the water and so the fishes are killed, not by the cold, but by the lack of oxygen.

Another reason for foul water is that too much dried food has been given late in the season. Much of this food may remain uneaten and this will soon turn the water very foul. It is a good plan to refrain from using any dried foods after the end of October, and if any food is given let it be in the form of live food, either garden worms, white worms, *Tubifex* or *Daphnia*. It will be found that once the water cools down in the region of 40°F (5°C), then the fishes will go off their food and any given will only remain to cause trouble. Some pondkeepers may not be able to recognise when the pond water is in an unhealthy state. The experienced aquarist will know very quickly and will know how to correct this state. The main thing is to empty out as much as possible of the water and refill with fresh. Then do nothing afterwards to cause fouling of the water. The fishes will not need constant feeding. It is surprising how much food is usually present in the normal pond. Healthy water should have no objectionable smell and should be clear in colour. A slight green tint, through the presence of green algae, will do no harm. Do not allow the water to remain too thick with this algae late in the year, as if a large quantity of it suddenly dies there can be severe pollution of the water.

Should the water take on a dirty-blue colour it is probably very foul and will smell badly. The sides of the pond and any water plants may become covered with a mauve coloured slime. In such water, fishes would soon die if there was a covering of ice on the water. However, whatever the condition of the water I think that it is a good policy to open at least one part of the pond every day once ice has formed. Do not, of course, use a heavy instrument to break the ice but prick it gently with a pointed instrument and make a hole with as little striking as possible. A quarter-inch chisel will make a good tool for this task, or a sharp pointed garden fork can be used. The idea is to make a hole of a fair size through which any foul gases can escape and to enable oxygen to enter the water. A very simple way to make a hole is to stand a water can of boiling water on

the ice. A nice round hole will soon be formed with no danger whatever to the fishes. The can will not fall into the water if it is left, as the handle and spout will prevent this from happening.

Small ponds can have some boiling water poured round the edge of the pond to melt the ice there, so that the top layer of ice can float freely. This saves the concrete sides from any cracking. The idea that a pond with sloping sides will prevent any cracking once ice forms is nonsense. Once ice forms on concrete nothing except thawing it can move it a fraction of an inch, and sloping sided ponds can crack just as easily as perpendicular-sided ones.

During a prolonged freeze up see that part of the ice is opened every day and give no sort of food whatever. If snow should fall and lie on the pond make sure that it does not remain for any longer than can be avoided. A layer of snow can darken the water and so it will become impure. Snow can be swept from a small pond and flushed from a larger one with a hose.

Once a thaw arrives the ice will soon soften. It can then be carefully pricked into small pieces and removed from the pond altogether. The ice will do no good if left in the water. Once it is removed some fresh water should be run into the pond to make up the loss and also to give the fishes some fresh well oxygenated water. If the pond has cracked through very severe pressure of ice, it may be necessary to make some repairs as soon as possible. If any of the cracks are near the top of the pond, it is possible to leave well alone until the weather improves. If the cracks appear to be rather deep in the pond a temporary repair job must be done. Should the cracks reach the bottom the water will all escape and the fishes will be left high and dry. If found before they dry out it is possible to save them by putting them into containers.

Should the cracks be only near the top and only a little water is lost a repair can be done fairly simply. Lower the water slightly to give you working space and get some Prompt cement from a builders' supplier. Scrape out the cracks (they show up as the concrete dries), and make a stiff mix of the cement with one part of sand. I like to sieve the sand so that only the very fine, sharp type is used. When ready to use it, wet a little at a time and force it into the cracks. Do not let it spread over the edges but see that it is forced well down into every crack. This cement sets rock hard in about half an hour, and so if the water has been well lowered for the repair, some fresh water can soon be run in and no harm will be done.

If only a small quantity of the cement has been used it is quite probable that the amount of free lime will do no harm. It depends on the size of the pond in relation to the amount of water in it and also on the extent of the cracks mended. In any case after an hour the mended portion should be carefully washed to remove any free lime. A quantity of lime in the water could be fatal to fishes and it is said that less than 1 per cent of lime is sufficient to kill goldfish. This point may well be thought about by any pondkeeper who is tempted to put lime into the water to try to kill algae; like the advice given by *Punch* to those about to get married: "Don't!"



## New Methods of Fishkeeping

HERR DIETER VOGT described aquarium techniques currently in use in Germany in his talk at Hendon's Annual Convention in London, which is reported here by A. E. STEVENS

OVER 350 aquarists with their friends and families attended the Annual Convention of Aquarists organised by Hendon Aquatic Society in November last. Amongst the audience were club members from the Greater London area and the Home Counties; there were also parties of aquarists from the Isle of Wight, Stone and North Staffs., Sheffield, Leamington and several other clubs from the South Coast. One visitor to the Convention had travelled down from Inverurie, Aberdeenshire.

The guest speaker was Herr Dieter Vogt, editor of the German aquarium magazine *Die Aquarien und Terrarien Zeitschrift (DATZ)*, who had travelled from Schorndorf, near Stuttgart, to give his first lecture in this country.

In the first part of his lecture, Herr Vogt spoke on "New Methods of Fish-keeping" and by means of diagrams he described his way of fish-keeping, which, he assured the audience, was very successful and his methods had been confirmed by other aquarists on the Continent.

In Germany, special water pumps for aquarium use were available and these pumps had a capacity of 4 litres per minute (almost 1 gallon per minute). The pump, which was suitable for large tanks, could be used with a conventional filter but better results were obtained if the water to be circulated was taken from a pipe set in a back corner of the base glass (with suitable precautions taken to prevent small pieces of gravel from being sucked into the pump). With this method the gravel was used as a biological filter and the anaerobic bacteria present in the gravel did the work of breaking down the mulm. The filtered water was returned to the aquarium by means of a pipe closed at its far end and having small holes at intervals along its length. For the labyrinth fishes this return pipe was set beneath the water surface but with fishes that took the oxygen from the water, the pipe was suspended above the surface and along the length of the back glass of the tank.

With such a volume of water being passed through the pump, quite a strong current was caused and the plants showed its direction. The fishes had to swim against it and consequently had much better vigour than aquarium fishes in still water; because they had to work to maintain their position they needed to be fed more—little and often was a good rule.

For smaller aquaria or where a smaller circulation current was required, a much smaller pump was available and was of such a size that it could easily be carried in a pocket, and to demonstrate this Herr Vogt caused much amusement by turning out his pockets in pretending to mislay it. The pump, developed as a result of satellite 'miniaturisation' techniques, was just over 2 inches long and about 1 inch in diameter. It was completely submersible owing to its plastic coating and was electrically safe, being run from a 16 volt a.c. supply from a small transformer. Its moderate output of 50 litres per hour (about 11 gallons per hour) made it suitable for breeding tanks. This small pump



Herr Dieter Vogt answers questions put to him by a group of aquarists at the Convention

caused a lot of interest amongst the audience who were delighted and amused with its demonstration.

The lecturer then went on to describe a new type of aquarium that had recently been put on the German market. This was the "Bohringer-Aquarium", named after its inventor. It was similar to the conventional aquarium but it had a bottom glass which sloped in two directions and in order to stand up with the sides vertical it needed a special stand. Typical dimensions for a reasonable sized aquarium would be 100 cm. long (40 in.), 60 cm. wide (24 in.) with the heights of the corners being 34, 36, 38 and 40 cm. (13½, 14½, 15½ and 16½ in.). In the lowest corner an outlet pipe was set flush with the bottom glass and in the diagonally opposite corner (the shallowest corner) there was the return pipe of sufficient length so that it could stand proud of the gravel. Either of the water pumps mentioned previously could be connected by means of plastic tubing between the outlet and inlet pipes of this new aquarium. The best method to prevent gravel from being sucked into the pump was to place a small sheet of nylon sponge (foam plastic) over the flush outlet and weight it down with a few pebbles and then cover with the normal gravel. The water return pipe could be hidden by means of a few small rocks or a piece of bark. Cork bark and dead wood were widely used on the continent as aquarium decorations, and when Herr Vogt stressed that sunken galleons, divers, mermaids, crocodiles etc. were not essential to good fish-keeping there was a roar of approval from the audience, who were in complete agreement with him. Because of the two-way slope this type of aquarium needed very little cleaning; all the mulm was drawn to the lowest corner, where it was sucked into the gravel and worked on by the bacteria.

Herr Vogt was firmly convinced that the plants in an aquarium are of far more importance than the fishes—if the plants were good and healthy then the fishes would also be

healthy. Aquaria should be well planted and the fishes should not be overcrowded; for best results a small shoal of one species of fish in a roomy aquarium was ideal. The temperature at which tropical fishes should be kept was also important, and it should not exceed 70° to 75° F (21° to 24° C). Keeping them at higher temperatures only caused them to live at a faster rate, which would shorten their life.

Herr Vogt said he was a great believer in the best fish foods being those caught with a net. The best food for fishes was, without doubt, gnat and mosquito larvae followed by glassworms and bloodworms. He had received some new plants from Thailand, and when these were washed free of mud he netted many small beetles which he fed to his fishes, and he reported that they were taken with great relish by them. Whiteworms and *Tubifex* were tanning and "clogged" the sex glands. Herr Vogt quoted an old German adage that "a good cockerel is not fat", and to illustrate this point he drew several parallels with human behaviour, much to the amusement of the audience. The advice to feed up fish before breeding for several weeks was wrong in his experienced opinion.

Many species of fishes thought to be difficult to breed could be induced to spawn by starving them, without aeration, filtration or water circulation for 1, 2, 3 or more weeks. At the end of this resting period the fish will have slimed and be in better health. Slow water circulation is then brought into action and the fish are fed as much gnat and mosquito larvae as they can eat, and after 2 to 3 days they will spawn.

Regular spawnings of spiny eels (*Mastacembelus*) were obtained by this method. Specimens were 6-8 in. long, and one female with five or six males was used in an aquarium thickly planted with *Vallisneria*. The males lay alongside the female and completely surround her by laying parallel to her body so that she is in the centre of the bunch. They swim as one (although the female literally has a head start on the males) up into the leaves of the *Vallisneria* near the surface, where they lay their eggs.

The spawning fish often come out of the water as they swim over the leaves that float on the surface.

During the interval Herr Vogt was besieged by many eager aquarists who were anxious to learn more about the small pump and his breeding induction methods. Herr Vogt was also able to renew his friendship during the evening with Hendon A.S. president, Mr. R. Skipper, who he met several years ago in Leiden, and with Dr. R. O. B. Liss, with whom he gave a lecture at a Continental Aquarists Association meeting in Monaco.

The second part of the evening's entertainment was an illustrated lecture on "Fishes". Many of the colour slides shown were taken by the speaker himself and showed many of the species of fishes kept by him. His commentary gave much information on the behaviour and breeding requirements of the fishes and was highly coloured with many witty observations.

Points for special mention are that all young *Barbus* species may be sexed when they have a nose to tail length of about 1 cm. (half an inch). Feed the young fish as much finely screened *Daphnia* and *Cyclops* as they will gorge and the males will be those with the slim bodies, despite the amount they have eaten, whereas the females will have greatly distended abdomens almost going to a blunt point at the deepest part of the body.

To breed cardinal tetras (*Cheirodon axelrodi*) soft water with a hardness 0.5DH (10 p.p.m.) or less was needed; water reaction was not very important as long as it was slightly acid (pH 6-7). Water can be softened by passing it through an ion-exchange medium (a type known as Lewatit 64 being ideal).

The pompadour (*Symphysodon discus*) can, with luck, be spawned in water with a hardness of 10-12DH (200 p.p.m.) but there is a better chance of success if the water had a hardness 1DH (0.05 p.p.m.) or less; the water to be acid (pH 5-6). Spawning media could be granite slabs, carbon-free slate bars or the broad leaves of *Echinodorus brevipedicellatus*. The parents should be left with their

During a visit to the London Zoo Aquarium Herr Dieter Vogt was shown behind the display tanks by Mr. G. J. Ashby (assistant to the curator), who is seen here (centre) giving details of the requirements of the tropical marine fishes in the large tanks below.



Photos: A. E. Stevens

young for 14-21 days. The longer the better, but if the parents become aggressive because of a new batch of eggs, remove the youngsters into water of the same hardness and temperature.

Almost guaranteed spawnings of harlequins (*Rasbora heteromera*) could be obtained if a shoal of six to ten fish was used. The starvation-gnat and mosquito larvae diet-water circulation technique mentioned previously is used, but on the day before spawning is required a 3 per cent salt solution is prepared and put in an all-glass tank. Have a net large enough to fully fit the all-glass tank and catch the fish to be spawned and transfer them all at the same time (this is important) to the salt solution, which should be the same temperature as that from which the fish came. Keep the fish in the net and keep them under observation all the time until the first fish shows any sign of distress by "rolling" or wavering (this may take 10 seconds, 10 minutes or longer). They must be watched all the time and as soon as this happens remove all the fish immediately (hence the reason for keeping them in the net) and put them in the breeding tank, which should have slight circulation. The fish will spawn early next morning. The pH and hardness of the water is not important; the fish will spawn in all waters, but the salt bath is important.

As *Bonia* species like to dig in the gravel, rocks should be placed on the bottom glass of their aquarium before the gravel is put in. The *Bonia* undermine rocks put on the gravel and the rocks will slip and can crack the bottom glass with disastrous results.

*Pelmatochromis kribbeni* like privacy whilst spawning, and a favourite method to ensure this is to cut a coconut in half, remove the "flesh" and cut a little more off one half so that the two halves may be joined together with one cut edge overlapping the other and forming a hollow shell. A hole is cut in one end and through this the shell is almost filled with gravel. The gravel-filled shell is then set with the entry hole uppermost in deep gravel in a well-

planted aquarium. The fish will scoop out the gravel from the shell according to their requirements.

It has been reported that the female of spawning *Corydoras* species takes the male's sperm into her mouth by sucking at his vent during the embrace. By means of a slow-motion cine film taken from an overhead position during a spawning and shown to him by a friend, Herr Vogt was able to report that this is not so. The male puts one of his pectoral fins under and around the female's mouth and barbels and presses her against his body. She lays one or two eggs into a pocket formed by her clasped ventral fins. The male ejects his sperm into free water and the female swims away from the male when released from the embrace. She swims through sperm-charged water and deposits the fertilised eggs on the plants or glass of the aquarium. After 20 to 30 such embraces, samples of the water in various parts of the aquarium were obtained by means of a pipette. Under the microscope each sample showed active male sperms. Dissection of the mouth of a dead female *Corydoras* showed that the female had no power to suck.

The Convention had to be called to a close as it had over-run by almost three-quarters of an hour, and there was a tremendous ovation for Herr Vogt which, undoubtedly, he deserved for his most excellent and informative lecture.

On the following day, Hendon A.S. arranged for their guest to visit behind the scenes of the Reptile House and the Aquarium at the Regent's Park Zoological Gardens. In the Reptile House an interesting hour and a half was spent handling several of the exhibits and exchanging experiences on the behaviour of reptiles and their bites. Herr Vogt has a vast knowledge of snakes, saurians etc. and can speak from personal experience of the many specimens he has in his possession. In the Aquarium an equally interesting time was had when Mr. G. J. Ashby, assistant to the curator, showed several species of fishes which were not to be seen in zoo aquariums on the continent.

## OUR EXPERTS' ANSWERS TO TROPICAL AQUARIUM QUERIES

The fish in my recently installed tropical aquarium keep rubbing themselves against the plants and the rockwork. Is this a sign of disease, and if it is what treatment is necessary to effect a cure?

First of all, make sure that the fish have no tiny white spots on their bodies and/or fins. If they have, lose no time in introducing a few drops of a 5 per cent solution of medical quality methylene blue into the water to colour it a distinct blue. Next, raise the temperature of the water to about 80°F (27°C), and keep it that high for 10 days. Treated promptly, the spots, which are really the cysts housing the parasites of white spot disease, should disappear within the space of a few days. Sometimes, however, fish will rub themselves against various objects in the aquarium when the water is new. As it matures (ages) they will behave normally.

I should appreciate some information on the sexing of the Siamese sucking fish (*Oryzias latipes*) and its breeding habits in the aquarium.

In specimens over 3in. in length the females have fuller bodies and fewer tubercles on the snout than the males. So far as we know the species has not been bred in captivity.

I introduced some *Cryptocoryne* plants into my aquarium, but after a few weeks the leaves and stems rotted away. I replaced them with new plants but the same thing is happening again.

Many queries from readers of *The Aquarist* are answered by post each month, all aspects of the fancy being covered. Not all queries and answers can be published, and a stamped self-addressed envelope should be sent so that a direct reply can be given.

The aquarium is brightly lighted and is maintained at a temperature of about 72°F (24°C). *Vallisneria*, *Hydrophilis* and Indian fern are doing well. Please tell me what is wrong.

Some *Cryptocoryne* resent being disturbed, and lose their leaves after transfer from one aquarium to another. But don't lose heart. So long as you leave what remains of the plants alone it is not unlikely that they will produce fresh growth before many weeks are out. One other point to observe is that *Cryptocoryne* do not like a very bright light. This might be the reason why your plants are not flourishing. See that the light-loving subjects such as *Vallisneria* give them slight shade.

A short while ago I added two small angel fish to my community aquarium. One of these angels is slightly larger than the other and is of a very aggressive disposition. In short, it bullies the smaller fish unmercifully. Can you suggest any way to remedy this shortcoming?

Apart from separating the fish before any serious injury is done, the only solution we know of to your problem would be to introduce two more similar-sized angel fish

into the tank. With other fish of the same species to attract its attention the bully will tend to leave its former target alone.

I have introduced some young *Cichlasoma nigrofasciatum* into my community tank and they are behaving themselves very well. Yet a friend has told me that this cichlid is one of the most belligerent of tropicals and will kill or maim every similar-sized or smaller species it comes across. Is this true?

The short answer to this question is yes. The zebra or nigger cichlid matures into a spiteful bully, and is totally unsuited to life in a community tank.

I have just bought a torpedo-shaped, handsomely garbed fish which the dealer called *Barilius christyi*. As I can find no reference to this fish in my books I should be grateful for any information you can give me concerning it.

*Barilius christyi* is a 5 in. cyprinid native to the Congo. It thrives best in soft, acid water maintained at a temperature of about 75°F (24°C) and eats any food. It is inoffensive by nature, and up to the present it has not bred in captivity.

Can coarse silver sand as supplied by horticultural sundriesmen be used as a compost in the tropical aquarium?

Really coarse silver sand will prove quite satisfactory as a compost. But do make sure that you get pure sand and not a blend of sand, fragments of crushed shell and chemical fertilisers.

The water in my aquarium placed near a window has turned bright green. Is there any way of ridding the water of the free-swimming algae without recourse to chemicals or drastic shading?

Remove the fish and empty about two shillings' worth of live *Daphnia* into the tank. The water fleas will soon eat the unicellular algae and render the water quite clear. Needless to say, the fish will have the time of their lives when they are returned to the aquarium.

Is it true that the White Cloud Mountain minnow can stand a temperature down to 60°F (16°C) without suffering any harm?

Yes, the White Cloud Mountain minnow is a very hardy fish and will feed and remain active and in excellent health at a temperature in the low sixties (°F). In point of fact, tropical conditions do not really suit it at all, and for breeding the species a temperature of about 68°F (20°C) is high enough.

Our water supply comes to us through copper pipes. Will this water kill any fishes introduced into it?

We do not think it will if it is some time since the pipes were installed and you take the precaution of letting the water run for about 2 minutes before using it to fill an aquarium. It is water left to stand in copper pipes for any length of time that is dangerous.

My aquarium is oozing water along the front bottom edge. I have tried stopping the leak by applying a well-known plaster filler, quick-drying enamel paint, and even liquid pitch smeared along the edge with a hot knife, but the leaking still persists. What can I do?

Mark the aquarium frame at the point, or points, where the water is oozing through and, after siphoning the water in the aquarium away, scrape the porous cement out and replace it with fresh, firmly pushed in with a narrow sliver of wood. After this has been done, paint all along the cement edge with two coats of aluminium, or some other metallic paint. This should make a lasting repair.

I read in a book that the coloration of fishes is affected by the sort of bottom they swim over. Is this true?

In most cases what you have read is quite true. You see, the colours of fish are due to tiny cells called chromatophores. The pigment granules which make up the

chromatophores shift their position, under the influence of direct or reflected light and other stimuli, and so cause fading or enhancement of colour. In short, a dark bottom backed by a vertical wall of green plants is more likely to induce maximum coloration in normally well coloured fishes than a pale compost in a sparsely planted aquarium.

Will you please give me some information about the disease called costia: is it easy to recognise in the aquarium?

Costia is caused by microscopic parasites (*Costia necatrix*) lodging in the skin of a fish and causing it, through the irritation set up, to secrete large quantities of slime. Apart from the slimy appearance of the skin—in dark pigment areas the slime usually takes on a cloudy appearance—the most noticeable symptoms of the disease are the attacked fish's loss of appetite, lack of energy (it usually hugs the bottom or remains fairly quiescent in the plant life), sunken eyes and folded fins. For those fishes which can stand it, immersion, or immersions, in a 2-2½ per cent solution of ordinary cooking salt for about half an hour will sometimes effect a cure.

Please tell me the temperature requirements, food preferred, and maximum size of the upside-down catfish (*Synodontis nigriventris*).

*S. nigriventris* flourishes best at a temperature range of about 72°F (22°C) to 80°F (27°C). It will eat any live or dried food, but should have algae or a substitute for algae included in its diet. It attains about 2½ ins. in length.

A beginner in tropical fishkeeping, I glazed a bought aquarium frame with a glazing compound recommended for fixing glass to steel windows by a local builder's merchant. Although the tank is leakproof all the fish I have introduced have died within the course of a few days. Please tell me what has gone wrong.

It is not unlikely that the glazing compound you purchased is not suitable for aquarium use and has had a harmful effect on the fish. We suggest that you empty the water away, wash out and fill the aquarium with fresh. Now obtain two or three ordinary guppies, or leave the tank unheated and introduce a common stickleback or two. If the fish survive and look in good health after a month or so, you can assume the harmful ingredients in the cement have leached out. But if the fish continue to die reglaze the tank with a cement specially manufactured for aquarium use. But do bear in mind that the cement is not the only thing which could have killed your fish. See that there are no metal objects in contact with the water, and guard against using a compost rich in shell fragments or anything else of a strongly calcareous nature.

I have a tropical aquarium in which are planted *Cryptocoryne* spp., *Najas* and *Hypophila*. These are growing remarkably well. But whenever I introduce *Vallisneria spiralis* *tenifolia* they always turn yellow and rot away in the space of 2 or 3 months. Can you give me any reason for this?

A lot of aquarists experience difficulty in getting twisted *Vallisneria* to prosper. Perhaps the light in your aquarium is not bright enough for this light-loving plant. Again, it does appear that some plants thrive in an aquarium at the expense of others. Maybe they are greedy for certain nutrients in the water and take them all for themselves. Further, it is not unlikely that some plants produce a chemical change in the water which inhibits the growth of others. Perhaps the wisest thing to do is to grow just those plants that get along well together and ignore the rest.

I should like to know whether or not catfish have eyelids or the means of closing their eyes? The reason for asking this is because my *Corydoras jelli* appears to close its eyes whenever it settles on some food and I have been rather puzzled (and worried) by this behaviour.

Certain catfish can roll their eyes, which creates the illusion that they are closing them or winking. This characteristic is nothing to worry about.

## COLDWATER FISH-KEEPING QUERIES answered by A. BOARDER

I have been keeping tropicals for some years and now wish to try my hand at exotic coldwater fishes. Can you tell me something about keeping sunfish?

An article on sunfish appeared in the April, 1955, issue of *The Aquarist*, and you may care to look this up. There are not many species of sunfish usually available in this country. All these fishes are rather similar to our own perch, therefore they prefer live foods at all times. In fact it is rather difficult to get some of them to take any form of dried foods, although some will learn to take dehydrated meat and shrimps.

I have heard salmon called cock and hen. Is this slang used by anglers or do males and females have another name?

Cock and hen is always used when referring to the sexes of salmon and trout. However, most aquarists refer to sexes of other fishes as male and female.

I have a goldfish which has difficulty in swimming properly. It often hangs head down in the water and sometimes almost turns on its back. Otherwise it appears healthy and eats well. What is the trouble with it?

This is a case of swim bladder trouble. This sometimes comes on suddenly with a change of temperature of the water and may clear up when the weather turns warmer. A salt bath will often put a fish right.

An aquarist friend recommended the use of methylene blue against gill flukes and other pests. Is this a good treatment?

Methylene blue is used by some aquarists for curing certain diseases, notably white spot, but it is not a universal cure-all. A few drops of 5 per cent solution of methylene blue to a gallon of water can be used for disinfecting plants collected from the wild.

I have one small goldfish which has been acting strangely. It makes sudden dashes to the bottom of the tank but otherwise appears healthy. Is it just high spirits?

It may be nothing to worry over; some fish will dash about occasionally and rub themselves against plants etc. On the other hand this action is sometimes a sign that there may be parasites of a kind on the fish. If it continues to act in this manner it can be removed from the tank and examined. If there are any flukes present, the fish will probably show some small blood streaks on the body. Later on it will go off its food and mouth at the surface. At a later stage the body becomes very emaciated and the fish will die. Should these early signs show on the fish then it should have a bath in a solution of Dettol; use a quarter-teaspoon of Dettol to a gallon of water. Only leave the fish in this solution for 15 minutes and less if it turns over. It should then be returned to fresh water, when it will soon recover. If the signs of flukes are not present the fish may be given a salt bath (about a tablespoonful of salt to a gallon of water). Let the fish remain in this for a day now and again.

I have a new unglazed tank frame 36 in. by 15 in. by 12 in. Which way up should it stand to be of benefit for my goldfish and shubunkins?

Most tanks of this size are glazed so that the 15 inches is the depth of the tank. However, if the tank is glazed the other way so that it is only 12 inches deep it will hold more fish. The usual allowance for a tank is 24 square inches of surface area to each inch of fish, not counting the tail. It can be seen then that if the tank is glazed to have a surface area of 36 in. by 15 in. it will hold about 22½ inches of fish but if set up the other way with an area of 36 in. by 12 in. it will hold only 18 inches of fish. However, some frames

have the top rail made from a narrower angle iron than the other parts, and if yours is like this you will have no choice about how to glaze it.

I have a tank in which the water plant cuttings will not grow; however, hornwort grows well. If I put in uprooted cuttings they do not make roots but just die off. What is the reason please?

I suspect that you have only gravel on the bottom and so there is no nourishment to encourage the plants to send out roots. Try placing a little loam under the gravel at the back of the tank. Then root your cuttings in jam jars with a little soil in the bottom. Once these have made good roots transfer them to the tank with some of the soil attached to the roots. The hornwort thrives because this plant does not make proper roots. The older stems just become well established in the mulm or compost on the bottom.

I have bred about 20 young goldfish in my outdoor pond and wonder which is the best way to get them through the winter? At the moment they are in a fibreglass pond about the size and shape of a bath, and the water is 12 inches deep. If I cover this with a glass frame will the fish be safe for the winter?

It is often better to leave the youngsters in the pond where they have been bred. If they have survived until the winter without being eaten by the larger fish it is quite possible that they can go through the winter safely in the pond. However, now you have them in the smaller pool if you cover the pool with a glass frame this will help considerably. A short while ago during hard frosts I covered a 60 gallon galvanised tank in my garden with some sheets of glass. Several tanks were left uncovered and all of these had a fairly thick coating of ice on them, but the covered one was quite free of ice. The glass delays the loss of warmth from the water and so the water will not freeze unless the frost is very severe and lasting.

I am interested in trying to breed coldwater catfish indoors. My tank is 42 in. by 15 in. by 15 in. and the fish are about 8 inches long. How can I sex the fish; what are their requirements for plants etc., for egg-laying; what is the temperature I should maintain?

I do not think that you have much chance of breeding from your catfish. This species reaches a huge size (one caught recently in this country weighed 33 lb.). Therefore one must assume that catfish require to be of a good size before they would breed. They are a continental type and so would be happy at a temperature of about 60°F (15°C). They might also breed at this temperature. It is difficult to sex these fish, as it is with most egg-laying species. There is little outward sign of sex but the female would certainly be fatter than the male near to breeding time. This is during the spring months. The reason why my book *Coldwater Fishkeeping* does not deal with this subject is that I do not recommend coldwater catfish for the garden pond, as they grow so quickly and are carnivorous, that they would soon be big enough to eat any of the other occupants of the pond small enough to get into their huge mouths.

Is it possible to breed veiltail goldfish all the year round as is done with tropicals? What procedure should I follow to commence in January and what temperature should I use?

It may be possible to breed veiltails all the year round provided that besides warmth you could provide correct lighting as well. It is far better to allow the fish to rest and regain their strength during the winter months. After all, the many tropicals which are bred throughout the year will live for a year and a half to 2 years only, but your goldfish variety should live for many years. You could start to breed them early in the year and the procedure is to allow

*Continued on page 185*

## our readers

Readers are invited to express their views and opinions on subjects of interest to aquarists. The Editor reserves the right to shorten letters when considered necessary and is not responsible for the opinions expressed by correspondents.



Address letters to The Editor, *The Aquarist*,  
The Butts, Half Acre, Brentford, Middlesex

### Technique for Tropical Marines

I WONDER if you would like to print some of my own experiences. While I would agree with most of the remarks of G. Stott and H. Shone (*The Aquarist*, November) on general tank cleanliness, their theory of electrical discharge from heaters etc. really surprises me, as I have had none of this trouble myself, using standard equipment now available. Indeed, I wonder how this discharge was measured and hope this point could be cleared up, as if this leakage was not measured then the trouble experienced could more likely have been caused by some more tangible trouble.

Also, epoxy resins used as a sealer have in my own experience proved totally inadequate. Indeed, after a month or two of immersion in sea water, I found that the filler could be peeled off with one's thumb nail, this failure again allowing pollution between cement and sea water.

Another ambitious test of epoxy resin was made, when I decided to construct an all-glass tank of 13 gallons capacity using ground  $\frac{1}{8}$  in. plate which was scrupulously cleaned with detergent before gluing. The tank and inmates prospered for about 3 months and then the thing leaked. The fish were removed to the old death cell (angle-iron tank) and, on examination, I found that the sea water had again penetrated between the glass and glue at nearly all the joints until I think will-power alone kept it together. I hope these two experiences with epoxy resins for marine aquaria will cause readers to tread carefully when using these adhesives.

In spite of previous disappointments and advice to give up, I decided to try my hand again; this time, however, I was determined to start off with a completely non-toxic aquarium. Encouraging news of the development of polyurethane paint decided me on the construction of an all-wood tank. Using  $\frac{1}{2}$  in. thick mahogany and Aerolite Marine Glue, the tank was finally painted with polyurethane on all surfaces and then fitted with a front glass pane bedded in with clear Bostik, which was allowed 3 weeks to set.

When the tank was completed, it was filled with salt water (using block salt), and allowed to soak for 2 weeks, then emptied, washed with warm fresh water and then filled with clean sea water, which was four parts artificial to one part natural. Strong aeration and filtration was commenced and the tank allowed to fallow for a further 2 weeks before the fish were added.

The tank has been running now for over a year and the two original clown fish which I used as guinea pigs to test

its quality are still with me, both being now 11 months old and thriving. During 1964 I have added to my collection at various intervals and now the collection includes two common clowns, one chocolate clown, two dominoes, one neon wrasse and one small shore crab  $\frac{1}{2}$  in. long which was caught locally and has shown no ill effects of the high water temperature. All these creatures have grown considerably and continue to thrive.

Reading your articles on marine fish-keeping in Ceylon prompted me to try the tank on a southerly facing window sill and I am convinced that the sunlight has improved their vitality even more, although I must mention that I have plenty of shells and coral in the tank for shade if necessary, and light only enters from above. I change 1 gallon of water in the tank per month (this means one-eighth of the water, as the tank is modest in size, holding only 8 gallons, plus coral etc.).

My biggest disappointment during the last year was when two species of butterfly fish died, having only survived for about 3 weeks. Their deaths are a complete mystery to me, as no reason could be found. My only consolation comes from the knowledge that these fish are notoriously short-lived under most aquarium conditions and I suggest that considerable amounts of fresh water must be available for success with these beautiful creatures.

As a result of chills and addition of new fish, outbreaks of a disease, namely a form of *Oodinium*, periodically appear. When infected with this contagious disease, the fish look as if it is dusted with grains of pepper. Some fish do not show up the spots very well and the only symptoms visible are fish knocking themselves consistently against coral and sand in between periods of lethargy. Common clown fish show up the spots very well and act as a canary with gas. Keeping the temperature at 81° to 83°F (27-28°C) helps counteract disease in clowns (below this they are very prone to many other troubles, fungus etc.), and the other fish show no ill effects. In spite of temperature, however, I have found that *Oodinium* will strike sooner or later and sulphathiazole sodium seems completely ineffective. When this disease is diagnosed, it is essential to treat the tank and inmates with 6 c.c. of stock solution of copper sulphate per gallon of sea water, the stock solution being made by mixing 1 gram of chemically pure copper sulphate with 1 litre of distilled water. Sometimes, after several weeks, the disease may reappear, probably because the copper is precipitated from solution and removed by routine water changes. When this happens, repeated treatment at the stated dose will clear up the disease in 1 to 2 days and has

always been 100 per cent effective with no ill effects to the fish.

Water density in my aquarium is kept about 1.022 and has given no trouble. The fish are fed on chopped mussel and earthworm, brine shrimp, marine dry food and white worms. *Tubifex* worms are left alone because I think the danger of internal bacterial infection is very great with this food.

Before I conclude, one more word about water change. I renew 1 gallon of water per month, but I would state that to lay down hard and fast rules for the amount and periods at which water changes are to be made depends on too many variable factors, such as crowding, overfeeding and lack of adequate aeration etc. I watch the fish closely; if they become sluggish and fins start to close a little over long periods, without any signs of spots on the fish, then I try a partial water change. Personally, I adopt regular water changes more as a safeguard than always a necessity.

Before summing up I would say that my experience has shown me that keeping marine tropical fish is quite practical, provided the marine aquarist is a little more ardent with regard to cleanliness and in the studying of his charges' behaviour.

The availability of perspex aquariums for marines has furnished a perfect receptacle for these fish, and is an asset for those who do not want to have the troubles associated with framed aquaria or the bother of making one's own tank of wood.

I have proved to myself and my friends that with a non-toxic tank, really adequate aeration, sunlight and the copper treatment mentioned, the vast majority of toy tropical marines may be kept with confidence.

I would like to thank Mr. Max Gibbs for his help in suggesting the copper treatments for *Oxidinium*.

D. BEVAN,  
(Member of the Marine Biological  
Association of Great Britain),  
Swansea, Glam.

#### German Congress

YOUR readers might like to know that the West German Guppy Federation will once again be holding their annual Guppy Show in Berlin in August/September, 1965, which will be followed by the 1965 Congress of the East German Federation also to be held in Berlin during September, 1965.

My reason also for writing is that aquarists here might like to take part in either or both Congresses as exhibitors or spectators, as both are events of extreme interest and hospitality.

I shall be visiting both Congresses and would be pleased to hear from any readers who might be interested in arranging a visit. If sufficient numbers of interested parties are available, a special Air Charter flight could be arranged.

Language as well as accommodation considerations can be taken care of and such a trip might find favour as a means of combining aquatics and holidays at the same time.

Dr. R. O. B. Lister,  
Ruislip, Middlesex.

#### Thanks for Support

MAY I, through the good services of your journal, send our Society's thanks to all the many aquarists who attended our recent Convention. Our thanks in particular go to the members of clubs in Sheffield, Staffordshire, the Isle of Wight, Leamington and several South Coast clubs who travelled quite considerable distances to be with other clubs from the Greater London area and the Home Counties to hear our visitor tell us a little of his fish-keeping experiences.

We certainly appreciate the support given to us in our effort to improve the knowledge of the hobby in this country. The continued support given to us each year is sufficient reward for all the hard work and organisation required to put on our Conventions each year.

Even at such an early stage after this year's Convention, arrangements are under way for our 1965 Convention, when it is almost certain that we will have a return visit from Mr. A. van den Nieuwenhuizen from Heemstede, Holland. Further details will be announced as soon as they are finalised.

A. E. STEVENS,  
Secretary, Hendon and District Aquatic Society.

#### Exchanges Wanted

THE Sheffield and District Aquarist Society have published the first issue of a Society magazine *Sheffield Aquarists Review*. It contains 26 pages with articles by members on general fish-keeping, fish breeding, plant growth and constructional details of equipment etc. The Society would like to hear from other societies who publish a similar magazine with a view to exchanging magazines.

R. E. GALLOWAY,  
Secretary, Sheffield and District Aquarist Society,  
71 Bent Lathes Avenue,  
Rotherham.

#### Marine Tropicals

AS an old reader and one who has kept tropical marines for the past 14 years it gave me great pleasure to hear that a few fellow aquarists are having some success in keeping these beauties.

Although I have specially built tanks and equipment I have yet to master the family of chaetodon fishes. From information received from America, I gather that the medium size fish are best as the large and small won't adapt themselves to aquarium conditions, and I must admit this has been so in my experience. I think it is a miracle that someone has kept them for 12 months. I only wish I was able to see his set-up, for I thought mine was perfect.

My tanks, 28 gallons, are made from  $\frac{1}{2}$  in. Perspex and the filtering is done by a Perspex turbine through nylon wool, at the rate of 15 gallons/hour. The sea water was obtained from the London Zoo; temperature is 72-75°F (22-24°C); density 1.023-1.025.

The fish are given three light feeds per day, changing from white worm, raw steak, live brine shrimp and, when available, baby guppies. If our fellow aquarists can give me some advice regarding the keeping of the chaetodons, I would be extremely grateful, at the same time offering my experience on any other marines.

F. A. COOK,  
London, N.17.

#### A Watford Society

I AM interested in forming the Watford and District Aquatic Society again. I have been keeping tropicals for only 6 months but I think we need this society in Watford. Aquarists in the surrounding areas who are interested are invited to write to me, stating at the same time whether they are prepared to hold any sort of office also how long they have been keeping their fish.

J. L. M. CANNAR,  
86, Leavesden Road,  
Watford, Herts.

## Coldwater Fish-keeping Queries

(continued from page 182)

them to rest at very cool temperatures for at least 3 months. Then at the turn of the year begin to warm up the water slightly until the fish start to feed well. This may be at about 55°F (13°C). If you can segregate the sexes it will help, as when they are put together in the spawning tank better results may be expected. Feed on plenty of live food; garden worms are excellent food for conditioning the fish. When the fish are put together raise the temperature of the water to 65°F (18°C). You may have to use a form of aeration as the warm water may not hold enough oxygen for the fish. A temperature of 70°F (21°C) can be used to hatch the fry, and rear them at this temperature until they are a month old. They can then be gradually accustomed to a temperature similar to the normal summer warmth.

I have a tank 30 in. by 14 in. by 12 in. in which I had two shubunkins, two moors and two fantails. The first four died within a month and a post mortem showed that they died from a parasitic infection. The tank has two 60 watt strip lights and I put some peat under the compost when the plants were first planted. The plants do not grow and look a sickly colour. What has gone wrong?

The fish were probably infected when you got them. The plants may be unhealthy because the strip lighting does not suit them. I know of several instances where these strip lights have had to be changed for ordinary filament lamps before the plants grew. Try a change of lamp and see if the plants start to grow. It would have been better to have placed some loam under the compost when you first set the tank up. As the remaining two fish appear to be growing all right there may not be anything wrong with your treatment of the tank, apart from the unhealthy plants. They may improve on a change of lighting and if you can get a little loam under the back part this, too, would help.

My catfish has become very fat on the underside. I wonder if there is an explanation for this?

It is most likely that this is due merely to distension of the stomach of the fish with food. The catfish may have swallowed one of your small fishes or it may have eaten something large. However, it may be a form of cyst or even a tape worm. Leave the fish without food for a few days and the swelling will probably be seen to subside.

I have a tank of a good size but I cannot seem to get my water plants to grow properly. What kind of lamp shall I use on a 24 inch tank? I had two 25 watt lamps but some of the water plants did not thrive. Should I have more lamps?

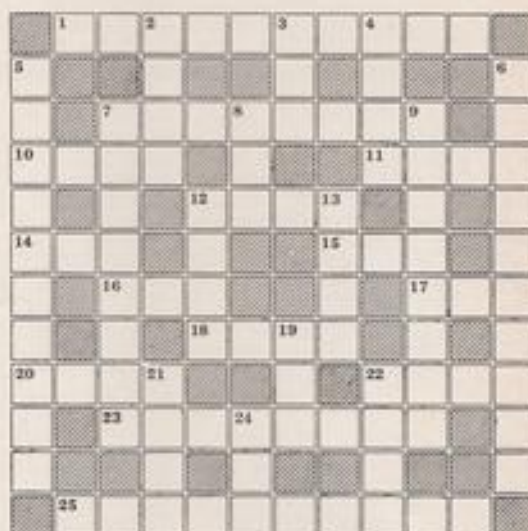
Two lamps such as yours should be enough for your aquarium but it depends on how much natural light reaches the tank. If it is in a dull corner then two 40 watt lamps would be better. You must experiment with lamps for a time as too much light encourages the growth of green algae. Try to determine the wattages which give the best results by trial and error.

I have a pair of orandas which have had fin congestion. They have now developed dark smears on their fins and bodies. What is the matter with them?

It is almost certain that some of the body surface of your fish was damaged by the disease. When the disease had cleared up, new growth has started to replace the lost tissue. This is usually blackish in colour but will soon turn to the old colour. All scaled goldfish types turn mostly black with the first colour change. The backs and fins of such fish turn black for a time but this black decreases gradually until it all clears away.

## The AQUARIST Crossword

Compiled by M. W. SAUNDERS



### CLUES ACROSS

- Does he have fish on a large scale? (4, 6)
- Checking the depth of the water (8)
- Tank adornment, made of cork (4)
- Colour of an expensive looking fish (4)
- A pin point is just about the tops (4)
- When freed of algae, this is not very becoming (3)
- The donkey starts assisting (3)
- Something you drink and eat all round (3)
- Belonging to (3)
- A friend from a crazy mixed-up team (4)
- Such a fin would not influence a judge (4)
- Drive (4)
- Might you see this at the water-jump? (3, 5)
- One might get what one is — (8, 2)

### CLUES DOWN

- Should be provided for a plecostomus (4)
- Tip (3)
- Conspicuous (4)
- Common name for *Cichlasoma mossii* (10)
- Merchant Navy ensigns (slang) (3, 7)
- What the fighter does with his young to prevent in-breeding (8)
- A jab from a bent pin (3)
- Leave the water in an Australian pot (2, 6)
- Home of the fighting fish (4)
- Getting the measure of the worm (4)
- A useful quantity for breeding (3)
- The water dweller went around (4)
- Second hand (4)
- Atmospherically suitable for tropical fish (3)

Solution on page 187





## from AQUARISTS' SOCIETIES

Monthly reports from Secretaries of aquarists' societies for inclusion on this page should reach the Editor by the 15th of the month preceding the month of publication.

**THE** month of November was an exceptionally busy period for the members of **Hendon and District A.S.**

The first of the meetings was a table show for a.v.v. mollies, a.o.v. tropical catfish (excluding corydoras species), a.v. characins, and a.o.v. tropical fish. During the judging, the results of the Society's Home Furnished Aquaria Competition were announced. Two members had visited the homes of the members and judged the entries which were then photographed. The resulting colour slides were projected whilst the judges commented on the tanks and told how they arrived at their decisions.

The following Thursday, the Society was host club to the other member clubs of the N.W.L.G.A.S. when another table show was held. The four classes in which each member club had the opportunity to show three entries were: breeders' tropical and coldwater, a.v. mollies, and a.o.v. tropical catfish (excluding corydoras). The supporting programme for the evening was an illustrated talk on "Fish Houses in Holland" given by Dr. J. N. Carrington of Inner-Pet Supplies. During question time, Dr. Carrington answered many queries regarding the working of Liquafly. The results of the competition to date (with the evening's results in brackets) are:—Willesden 94 pts. (15 pts.); Riverside 70 (8); Hendon 42 (18); Hampton 39 (10) and Independent 25 (4). Only two of the clubs, Willesden and Hendon, had a bonus of 5 points for full entries in the evening's classes.

Several members attended the official opening of the new extension to the Out-Patients Department at Edgeware General Hospital. The Minister of Health performed the ceremony of opening the new Department which has the most modern and complete facilities of any hospital in the country. The Society had, after several months planning and consultation with the architect, installed a large aquarium in the screen between the reception and waiting area. The siting of the aquarium is such that it is visible from both sides and one end. This was a challenge to the furnishing ingenuity of the members concerned but with a little effort and thought they were able to furnish the aquarium to give a pleasing picture which was at the same time both permanent and yet really practical for good fish-keeping. This new tank brings the number maintained by its members at this particular hospital to four. The tanks are very popular with the patients (especially the young children if one judges by the amount of sticky finger marks on the front glass) and nursing staff.

On the last Thursday meeting the Society held its annual general meeting at which several members were re-elected as officers of the Society. Mr. A. Sutton was re-elected chairman; Mr. K. Childs, vice-chairman; Mr. P. O'Connell, treasurer; Mr. A. E. Stevens, 2 Dallas Road, Hendon, N.W.4, secretary.

The final event in the Society's very busy month was its annual convention which was held on the last Saturday of the month. The convention was very well supported with aquarists from many areas attending.

**THE** Ayrshire A.S. held its annual general meeting recently, and the following officers were elected for 1965. President and

F.S.A.S. delegate, N. J. Balnes; vice-president and assistant delegate, R. Wilson; secretary, J. G. B. Graham, 10 Beechwood Road, Mauchline, Ayrshire; treasurer, M. Dunlop; publicity officer and competition secretary, J. Mellison; assistant competition secretary, W. B. McConnelly; social convener, J. Montgomery; committee members, J. Wilson, A. Donaldson, T. D. Potter.

**THE** annual general meeting of the **Sheffield and District A.S.** was held recently, when the following officers were elected. President, Mr. W. Taffel; vice-presidents, Mr. J. Hudson, Mr. A. Abdy; hon. secretary, Mr. R. E. Galloway; social secretary, Mr. D. Craven; treasurer, Mr. K. Middleton; show secretary, Mr. K. Colton; committee members, Mr. D. Birch, Mr. J. Mitchell. The president in his annual report outlined details of a successful year's events both socially and in the show world. The Society had been fortunate to win a number of major prizes at various shows especially the B.A.E. Membership was at a satisfactory level and 1965 was awaited with anticipation. The fifth annual open show will be held on Sunday, 25th April, 1965. The Society held fortnightly Friday meetings in the Earl of Arundel & Surrey Hotel, 528 Queens Road, Sheffield, 2. New members and visitors are welcome. Further details are available from the hon. secretary, Mr. R. E. Galloway, 71 Bent Lanes Avenue, Rotherham.

**AT** the annual general meeting of the **Wakefield and District A.S.** the following officers were elected to serve during 1965: Chairman, Mrs. M. Turver; vice-chairman, Mr. D. Newman; secretary, Mr. C. Archer, 8 Lindale Mount, Alverthorpe, Wakefield; treasurer, Mr. A. Bates; convener, Mr. D. English, Mr. A. Cotton. Meetings are held on the second Tuesday of each month at the Waterloo Hotel, Westgate, Wakefield. There will be a table show at each meeting, and speakers whenever possible. Several outings are also being planned for 1965. The overall winners of the table shows during 1964 were: A.O.V., Mr. G. Bealby; specified, Mrs. M. Turver. Any persons living in the Wakefield area will be sure of a warm welcome.

**THE** **Urmston and District Aquarium Society** held their annual general meeting on 2nd December, at which the following officers were elected: Chairman, Mr. B. Ogden, who takes over from Dr. Scott Clark, life president; secretary, Mr. G. A. Collins, 27 Gushford Road, Droyilstone, Urmston, Manchester; treasurer, Mr. P. Whitaker (re-elected), Mrs. C. Gooden, was presented with the Founders Cup and made a life member of the Society in appreciation for her work as secretary.

A GOOD number of members of **Nottingham and District A.S.** attended the general meeting to listen to a very enlightening talk from Dr. Cole on the subject of guppies. Dealing only with the four main strains, scarf, veil, fan and delta. The careful selection of mates was impressed upon those present if the best results were to be obtained. A vote of thanks was given to Dr. Cole by the president, Mr. Lynn. Result of the table show for cichlids over 3 in. was as follows: 1, K. Riley; 2, C. Hill; 3, E.

Smith. The raffle prize donated by Mr. E. Smith was won by Mr. B. Inman and two new members were enrolled.

Recently N.A.D.A.S. visited Notts Tropicals for the return leg of the inter-society show. This was won by the N.A.D.A.S.

**RECENTLY** the **Southend, Leigh and District A.S.** staged a small annual show in conjunction with the Leigh Horticultural Society's Chrysanthemum Show. There were 26 tanks on display, containing almost 50 varieties of tropical fish. The judge was Mr. H. A. Giles. The results were as follows: Furnished aquaria: 1, J. H. Preston; 2, D. M. Cherrington; 3, H. C. Holmes. Specimen fish (total of one variety): 1, A. J. Mason (tiger barbs); 2, B. Martin (red Siamese fighters); 3, J. H. Preston (Veitl guppies); 4, B. Martin (scats). Display of fish: 1, M. J. Willis; 2, C. Bennett; 3, B. Clements; 4, K. Brown. A most enjoyable evening was had by all at the annual dinner and dance and Mr. A. J. Mason (president) thanked Mr. M. Willis for his work in organising the event and ensuring its success.

**AT** the last meeting of the **Dunfermline A.S.** 30 were present including two local visitors and four members of the recently formed **Montrose A.S.** The table shows were breeders (livebearers) and breeders (egglayers) and three classes were judged by F. McNight and A. Robertson respectively. The results were: Breeders (livebearers): 1 and 2 and Balgilly Trophy, W. S. Russell; 3, A. L. Hastie. Breeders (egglayers): 1 and 2 and Balgilly Trophy, P. N. O'reening.

The programme was a talk by P. N. O'reening on breeding experiences with many and various species of fish, and his methods of conditioning the fish. His observations on the differing ways of spawning and the care of the eggs, and their subsequent development were of great interest to all. Hints on feeding the fry then followed and were greatly appreciated.

**AS** from 5th January the **Riverside A.S.** will hold the meetings at Blythe Hall, Blythe Road, Hamstrath, W.14, on the first and third Tuesday of each month. New members can be assured of a warm welcome.

### CHANGE OF NAME

**AT** the November meeting of the **South Wales and Monmouthshire Characin Society** a unanimous decision was taken in favour of renaming the Society, in order to extend its interests, thus covering a wider field. The Society's new title is the **South Wales and Mon. Coldwater and Tropical Fish Club**. The venue and date of the meetings remain the same, being the third Saturday of each month at the "Old Arcade Inn," Church Street, Cardiff, commencing at 7.30 p.m. The existing officials of the old society remain in office.

The remainder of the evening was taken up with points of discussion, and questions included were "The reasons for the apparently high mortality rate of *Apoistogramma nanae*," "The spawning procedure of the black-ridge characin," "The hardness of water," and "The origin of the so-called 'half-black' Guppy." Prospective new members are invited to contact the hon. secretary, Mr. M. J. Peery, 45, Western Drive, Gabalfa, Cardiff (tel. 66573), from whom further information can be obtained.

**THE** **Thurrock Aquarist Club** table show results for November and December were as follows: E.L.T. carps: 1, 2 and 3, Mr. D. Durrant. Barbs: 1, Mr. E. Nichol; 2 and 3, Mr. D. Durrant. Characins: 1, Mr. R. Nichol; 2 and 3, Mr. D. Durrant. A.O.V.: 1, Mr. R. Nichol; 2, Mr. Tankard; 3, Mr. D. Durrant. The Club chairman, Mr. R. Nichol, recently gave an interesting talk on show plants. The talk was enjoyed by all and many useful tips were passed on.

The **Thurrock Aquarist Club** meet on alternate Mondays and all new members would be welcomed. Please contact the chairman, Mr. R. Nichol, 34, Arthur Street, Grays.

AT the monthly meeting of the **Aireborough and District A.S.** the following officials for 1965 were elected: Chairman, Mr. P. A. Watts; secretary, Mr. R. E. Hampson. The Headlands, Scotland Lane, Horsforth, Leeds; treasurer, Mr. G. E. Walker; show secretary, Mr. H. Myers; committee, Mr. Lister, Mr. Chadwick, Mrs. Helm, Mrs. Hampson; auditors, Mr. K. Emms, Mr. Lister.

Following the election of officials there was a general discussion on the future programme of the Society, and it was decided that the annual open show be held on the 21st March. The Society are extending the number of classes to 32 including classes for reptiles and amphibians. The Society holds its meetings on the first Thursday of each month at the St. Andrew's Church Institute, Chapel Lane, Yeading. If any persons would like to come along they can be assured of a warm welcome.

THE officers elected at the annual general meeting of the **Swindon and District New A.S.** were as follows: Chairman, Mr. R. Hoskins; vice-chairman, Mr. K. Whitaker; secretary, Mr. R. Hague (8 Larkfield, Covingham Park, Swindon); assistant secretary, Mr. K. Martin; treasurer, Mr. J. Haves; assistant treasurer, Mr. R. Morgan; press secretary, Mr. K. Martin; librarian, Mr. L. Thomas. Meetings are now to be held on the first Saturday of each month at the Eastcott Hotel at 7.30 p.m. New members are always welcome.

#### OBITUARY

THE death is announced of Mr. C. A. Blake, one of the founder members of **Rochdale and District A.S.** Mr. Blake was well known in Rochdale and the surrounding areas, although not of recent years, for his judging, exhibiting and breeding of fish, and he will be greatly missed by the Society.

THE annual general meeting of the **Bristol Tropical Fish Club** was well attended. The secretary reported a successful year with over seventy members. The treasurer reported the Club to be in a sound financial position. The following officers were elected: Mr. N. Count, chairman; Mr. B. Clarke, vice-chairman; Mr. W. Holland, secretary (re-elected); Mr. L. Littleton, treasurer (re-elected); Mr. F. Barry, reporting secretary (re-elected); Mr. J. Quayle, librarian. The past-chairman, I. Nightingale, did not seek re-election.

A committee has been formed for the 1965 show which will again be held in June. The show secretary is Mr. B. Clarke, 55 Duckmoor Road, Ashton, Bristol. The Club meet on the third Thursday of every month at The Old Duke Hotel, King Street, Bristol 1. Old and new members will always be warmly welcomed. The secretary's address is 416 Whitehall Road, St. George, Bristol, 5.

THE fourth annual dinner and social of the **Hounslow and District A.S.** took place recently when over eighty members and friends attended a most enjoyable evening. The

presentation of the year's awards took place, and a cabaret floor show was very much enjoyed. A basket of fruit was presented to Mr. Ray Luff, the Society chairman and his wife for the great work that they had done to make the evening the success it was.

The annual general meeting of the Society was held recently when the election of officers for 1965 took place, the result being as follows: Chairman, Mr. R. Luff; secretary, Mr. D. Woodward; treasurer, Mr. R. Borber; show secretary, Mr. H. Pratt; press secretary, Mr. B. Boulton; librarian, Mr. D. Parrick; public relations officer, Mrs. Jean Sturry; floor members, Mr. R. Scurry and Mr. T. Smith; entertainment officer, Mr. C. Wood; auditors, Mr. Whithead and Mr. Way. The Society now meets fortnightly at the Territorial Army Drill Hall, Hansworth Road, Hounslow, on Wednesdays.

RECENTLY the **Independent A.S.** staged a six-club show and there were 60 first-class entries. While the judging was taking place, a slide show on I.L.L.T.C. was presented by Mr. Chazmas (Wychamstown and District) and proved to be excellent entertainment. Prizes were presented by the deputy mayoress of Ilington, Mrs. G. Barnard, and the results were as follows: Plaques: 1, R. Sanderson (Willesden); 2, T. Glass (Willesden); 3, F. Caffell (Independent); 4, G. Jennings (Hampstead). Barbis: 1 and 2, R. Porter (Willesden); 3, B. Robertson (Hendon); 4, D. Mann (Independent). Corydoras: 1, F. Oliver (Hendon); 2, E. Cox (Independent); 3, C. Brown (Willesden); 4, M. Richardson (Riverside). Loaches: 1, R. Cleveland (Riverside); 2 and 4, R. Porter (Willesden); 3, G. Bostock (Hendon). Total: Willesden 114 pts.; Riverside 85 pts.; Hendon 55 pts.; Hampstead 45 pts.; Independent 36 pts.

THE election of officers at **Thurrock A.S.** annual meeting resulted as follows: Chairman, Mr. B. Nichols; secretary, Mr. P. Sowell; treasurer, Mrs. B. Nichols; show secretary, Mr. E. Nichol; committee man and publicity officer, Mr. D. Durrant; librarian, Mr. P. Jarvis; recorder, Mr. I. Smith.

The trophies for the past year were presented to the following members: Mr. D. Durrant, the Shield and Plaque for winning the Member of the Year Competition. He also gained the most points in table shows throughout the year to win the Swanbury Shield and Plaque. Runner-up in the Swanbury Shield Competition was Mr. E. Nichol. Runner-up in the Member of the Year Competition was Mr. P. Jarvis for the second year in succession. The Home Aquaria Competition was won by Mr. B. Nichols and he was presented with the Cup and a plaque. The runner-up in the Home Aquaria Competition was Mrs. B. Nichols. The chairman reported a moderately successful year with the highlight being the grand aquabazaar held in October.

NEWS from **Bradford and District A.S.** includes the final placings for the monthly table shows. The leading members were as follows: A. Firth, 40 pts.; J. Holmes, 27 pts.;

H. Fletcher, 21 pts.; J. Hooper, 15 pts.; A. W. Cripps, 12 pts.; J. R. Smith, 11 pts.; P. Moorhouse, 10 pts. The Arthur Thornley Memorial Trophy was won very convincingly by Mr. Alec Firth. Recently the Society had a lecture from Mr. J. R. Stott on "Goldfish Breeding in Ponds".

THE second annual dinner of the **Newport A.S.** was held recently. Guest of honour was Mr. John Wheeler, secretary of the Bristol tropical study group. Also present was Mr. Richard Wigg, chairman of the South Wales tropical study group. Awards won since the last open show were presented by Mr. Wheeler and were as follows: Club points shield, Mrs. A. James; Cole cup, Mrs. M. Burgwin; junior cup, M. Parry; Home aquarium cup (tanks over 2 ft.) H. J. Wall; tanks 2 ft. and under, J. Burgwin; ladies, Miss J. Morgan. The dinner was followed by a social evening, society chairman, Mr. C. Salmon officiated.



### The Aquarists' Badge

PRODUCED in response to numerous requests from readers, this attractive silver, red and blue substantial metal emblem for the aquarist can now be obtained at cost price by all readers of *The Aquarist*. The design is pictured here (actual size). Two forms of the badge, one fixing the lapel button-hole and the other having a brooch-type fastening, are available.

To obtain your badge send a postal order for 2s. 6d. to *The Aquarist*, The Butts, Half Acre, Brentford, Middlesex, and please specify which type of fitting you require.

### Crossword Solution

P	O	N	D	K	E	E	P	E	R										
F	O	O	N	A						R									
I	S	O	U	N	D	I	N	C	E										
R	O	C	K	I						C	O	L	D						
E	A	S	P	O	T	A	D												
M	A	T	I		A	S	S	U											
O	T	E	A		P	H	I	S											
U	E	M	A	T	E	O	T												
T	O	R	N		W	U	R	G	E										
H	S	E	A	H	O	R	S	E	R										
S		W	O							S									
E	N	T	I	T	L	E	D	T	O										



**"more!" — OF COURSE ALL FISH WANT MORE "TROPICO"**

**"TROPICO" FISH FOOD HAS**

All the necessary vegetable and animal vitamins required to breed and raise to full maturity every kind of Tropical Fish known. A highly nutritious and invigorating food of exceptional nourishment.

1/6 DRUM 2/3 TINS

Manufactured by **LIGGINS, BRAMLEY, ROTHERHAM, YORKS.**

**EHEIM**

## **AQUARIUM POWER FILTERS**

Perfect Filtering for Freshwater or  
Marine Aquaria

High Volume Output—60 Gallons  
or 120 Gallons per hour

Super Aeration Combined with  
complete removal of Chemical  
Impurities

Will completely clear green water in  
hours

A complete range to suit your  
needs of Filter Mediums  
Designed for use with

**EHEIM** POWER FILTERS

## **Star Pump "64"**

New improved model of the Record Breaking Aerator  
Aerates up to 6 Tanks  
Prized for its quiet long running performance

**40/-** including 15% surcharge



*Available from your local dealer or direct from:*

**SOUTH COAST AQUATIC NURSERIES LTD.**

OLD BATH ROAD · COLNBROOK · SLOUGH · BUCKS



**Make a New Year Resolution!**  
**Feed your fish *FRESH* food!**

## BLUE DAILY

**VACUUM PACKED!**

**Because** "Blue Daily" is vacuum packed it is as fresh when you open it as when it left the factory

**Because** natural foods such as daphnia, cyclops and mosquito larvae are the most important ingredients, the growth of the fish will be helped, and the health of the fish maintained

"As fresh as live food"

*Insist on "Blue Daily"*

**Price 3/- per tin**

From  
**HILLSIDE AQUATICS**

44 Woodberry Way, London, N.12

Importers of Tropical Fish for Wholesalers. Members of The Pet Trade Association

*Author of Exotic Fishkeeping*

## MARSHALL'S AQUARIA

**26, Westbury Lane, Buckhurst Hill, Essex.** Open 6 days each week 10 a.m.-1 p.m. 2 p.m.-6 p.m.  
 Closed all day Tuesday

(Telephone: BUCKHURST HILL 4708)

Being just outside London we are very easy to reach. By tube train on the Central Line it is thirty minutes from the West End to Buckhurst Hill Station or by Bus routes 20, 38A, 167 to Bald Faced Stag and five minutes walk from there. There is always someone in attendance at our hatchery so you are always welcome to walk round without obligation and observe our tropical fish of which we have 130 species in almost natural conditions.

Here is just a few rarer fish that we have at present. Puffers, Glass Fish, Splash Tetras, Apthanasia Scobia, Orange Chromides, Lyretail Veltiers Mollies, Green Parochax, Ramirezii, Flying Barbs, Reed Fish, and many others. We have a good selection of Cichlids, including Jack Dempseys, Texas Cichlids, Tilapia Hoodlouis, Blue Acaras, Brown Acaras, Nigger Cichlids, Mozambique.

Also our own fish food made from bullocks' hearts, best liver, fish, Agg-Agar and shrimp is obtainable sent direct from here and reaches you in perfect condition. Send for N.O.F.F. (Nature's Own fish food) 2s. 6d., post free. Even our cichlids eat it greedily being 99% protein. Treble quantity 6s. post free.

**MANY SECONDHAND TANKS FOR SALE**

We are now sending fish by Rail. Carriage and Telegram 12/6. Minimum orders £3. Please send S.A.E. for lists.

### THIS MONTH'S BARGAIN OFFER OF FISH

Blue Acaras, Brown Acaras,  
 Convict Cichlids .. 2/6 each or 4 for 8/-  
 Mollies, Platys, Swords .. 2/6 each or 4 for 8/-

### THIS MONTH'S BARGAIN OFFER OF PLANTS

20 plants of 6 varieties plus one ulvaceous for 10s. post free.

40 Assorted plants including Cryptocorynes, Spatterdock, Water Lettuce, Aponogeton Undulatum for £1 post free.

From our extensive list of plants we offer the following plants post free.

Twisted Vallis ... Per Doz. 5/6	Indian Fern ... .. Each 2/6
Portuguese Vallis ... .. 5/6	Banana Plants ... .. 6/6
Sage Natas ... .. 5/-	Water Orchids ... .. 6/6
Cabomba ... .. 6/6	Cape Fear Spatterdock .. 7/-
Isocaps ... .. 6/6	Broad Leaf Amazon Plant .. 9/-
Hydrophyllum ... .. 6/6	Cellophane Sword Plant .. 9/-
Myriophyllum ... .. 6/6	Madagascar Lace Plant .. 15/6
Red Ludwigia Ternis ... .. 6/6	Aponogeton Undulatum .. 2/6
Giant Sag ... .. Each 3/-	Aponogeton Ulvaceous .. 3/6
Water Wistaria ... .. 2/6	

**WHOLESALE PLANTS S.A.E. FOR LIST**

### OUR SPECIAL OFFER

of Thermostat, Heater (state wattage) and  
 Thermometer is available . . .

**post free for 20/-**

FOR THE BEST FISH-FOOD

## McLYNN'S FISH-FOOD

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

*From your Pet Shop or direct from:*

### McLYNN'S AQUARIUM

EWHURST, Nr. CRANLEIGH, SURREY  
Telephone: EWHURST 446

FOR THE BEST BOOK

"ALL ABOUT  
TROPICAL FISH"  
by D. McINERNEY OF  
McLYNN'S AQUARIUM  
75/- Postage 2/3

*McLynn's*

FOR THE BEST FISH & PLANTS

## McLYNN'S AQUARIUM

VISITORS WELCOME  
BY APPOINTMENT  
11 a.m.—5 p.m. CLOSED  
ALL DAY WEDNESDAY

BUY DIRECT FROM  
THE BREEDER

ALL STOCK FREE FROM DISEASE  
SOLD UNDER A WEEK'S  
GUARANTEE

S.A.E. FOR RETAIL LIST.

## HYKRO PRODUCTS from DENMARK

**HYKRO:** Fish Foods will keep your Fish in Show and Breeding Condition. The Famous Hykro Flakes 1/-; Breeders Packs 32/6.

**HYKRO:** Natura for all Fish 8d. **HYKRO:** Coldwater Fish Food 1/- ½ lb; Pack 2/-. Also used for Larger Tropicals. **HYKRO:** Shrimp-meal 10½d. Good for all Fish but especially for Rearing Fry of all kinds. New Fish Foods appear on the market almost daily but Hykro Foods have stood the test of time **25 years**, and are used extensively all over the world.

**HYKRO** Aquatic Appliances have also stood the test of time. Breeding Traps, Filters, Feeding Rings, etc. **HYKRO** Ichthyophilos. A wonderful cure for most Fish ailments 1/6. **HYKRO** Nutria Vitalizers 1/- are wonderful for promoting quick growth of Plants and where there is good Plant growth, Fish and other aquatic life will be in good health. **HYKRO** Lines are stocked by all good pet stores and Aquatic Traders. Insist on the best.

**IT'S HYKRO.** Reasonable in price and absolutely unbeatable.

**JOE GRASSBY** (Importer and Wholesale Distributor)

The Hykro Depot, Mobberley, Nr. Knutsford, Cheshire.

NEXT MONTH

THE  
**'WHALES'**  
ARRIVE

*They're crossing  
the Atlantic now!*

***I was a  
Teenage Rachman***

Overcrowded property — that was my line! But I didn't mean to be. I had a nice aquarium, with just the right fish in it. Then I started feeding them with ELITE . . . They grew, and grew, and G-R-E-W; soon I was desperate. But Xmas saved me from disaster — another aquarium, and now I have two contented apartments.

ELITE (Tropical) 2/- and 5/-

ELITE (Coldwater) Large Tin 2/6

Trade Agent:

Barry M. Austin, 230 Staines Road, Twickenham, Middlesex

or Post Free direct from the makers:

DERHAM'S FISH FOODS LTD.,  
23 Queens Avenue, Watford, Herts.  
Phone: Watford 21708

**INTER-PET Fibreglass Rocks**

Light in weight.

Can be trimmed to any shape you require.

As recommended in December 1964 Aquarist.

**Longlife Fish Foods**

Longlife Shrimp-el-etts by Sanders 4/3d.

- a treat for the larger fish

- can be crushed for small fish

Small Corner Set for 24 inch tank	... ..	27/6d.
Large Corner Set for 30 inch tank	... ..	19/6d.
Rock No. 1 (small) (about 4 inches across)	... ..	3/9d.
Rock No. 2 (medium small)	... ..	4/9d.
Rock No. 3 (medium large)	... ..	5/6d.
Rock No. 4 (large) (about 12 inches across)	... ..	8/3d.

Longlife Goldfish Food. 1/9d.

Longlife Conditioning Food. 3/2d.

Longlife Regular. 2/3d.

**INTER-PET — DORKING — SURREY**

**Price Increases due to Import Surcharge.** We regret to announce the following increases as from January 1st while the import surcharge is imposed. We will make reductions as soon as possible.

Jeto Standard Airpump. Old Price 20/- Now 21/-

Perma Airpump. Old Price £14 0. 0. Now £15 8. 0.

Ceramic Ornaments - increased by 15%

Thanks to the co-operation of our suppliers we have been able to maintain the price of all other items.

# British Ichthyological Society

Membership Secretary  
Ian R. Howcroft  
73, Browning Road, Luton, Beds.

We welcome members who are interested in the more scientific side of fishkeeping. We cater for them through our Correspondence Course, Library, Journal, advice, and scale-reading services. Membership is not expensive; 10/- Entry Fee and £1 subscription per year, including the Journal and the Newsletter. Juniors (under 16) are admitted for 10/- p.a., pay no entry fee, and get a free badge on joining. Forthcoming schemes include: Survey of Lough Ree; Survey of stretch of Upper Ouse; Mapping of British fish species; Saving British burbot; and many others. There is a place for everyone in the B.I.S. Will you take up yours?

Please enrol me as a member of B.I.S. (Associate). I enclose requisite amount\*.

Name .....

Address .....

Amount Enclosed .....

Please return this form to the Membership Secretary.  
\*USA: \$3.00, Junior \$1.50.  
A Banker's Order Form is available on request.

## W. HAROLD COTTON

F.R.M.S.

### ICHTHYONOTOMIST

#### POST MORTEM EXAMINATION of Tropical and Coldwater fishes

Specimens should be wrapped loosely and very wet in greaseproof paper, surrounded by a damp cloth and then re-wrapped in dry greaseproof paper and sent in a strong container. A brief history and any relevant details should be given. No preservatives please.

Examination fee 3/-

39, BROOK LANE, KINGS HEATH,  
BIRMINGHAM 14

Phone HIGbury 1693

### I've Got Millions!

#### WORMS! FOODS! COMPOSTS! RESULTS!

EUGLENA	2/6—With 8 page instructional booklet
MICROWORMS	2/6—Complete with feeding powder
MICRO FOOD	2/6—Specially developed for Micro
GRINDALWORMS	2/6—Miniature W. Worms Easy to breed
GRINDALWORMS	30—Mature cultures in wooden boxes
GRINDAL FOOD	2/6—High protein content. Rapid results
GRINDAL COMPOST	2/6—Finely ground with organic base
WHITE WORMS	2/6—With complete instructions
WHITE WORMS	30—Mature cultures in wooden boxes
WHITE WORM FOOD	2/6—Exclusive formula. No mildew
WHITE WORM COMPOST	2/6—Compounded for quicker breeding

Breeders' packs; five times 2/6 quantity for 7/6

Ask your dealer, or free delivery from

E. ARNOLD, 80, MONEGA ROAD, LONDON, E.7.

### NOW IN STOCK

"A Simple Pond for the Amateur"

1/6 (post free 1/8)

"The Guppy"

2/6 (post free 2/10)

"Keeping Reptiles and Amphibia"

2/6 (post free 2/10)

"Exotic Egg-Laying Fishes"

2/6 (post free 2/10)

"Fish Foods and Feeding"

4/6 (post free 4/11)

"Coldwater Fishkeeping"

5/- (post free 5/4)

Obtainable from:

"The Aquarist"

The Butts, Half Acre, Brentford, Middlesex

OR FROM ALL THE LEADING PET STORES

## PREPAID ADVERTISEMENTS

5d. per word (12 words minimum) Box number 2/- extra

### FOR SALE

**CHELTEMHAM.** Largest selection of Tropical and Coldwater fish in Gloucestershire. Equipment, Plants, Polythene, Plastic, Fibreglass Pools, Houseplants. Patricia Prence (Prop. Mr. B. R. James), Florists & Aquarists, 10, Suffolk Parade, Cheltenham. Tel. Chelt. 24949.

**PERRY'S for Plants.** 1st and 2nd Awards British Aquarists' Festival. Assorted selections Tropical or Cold 7s. 6d., 10s. 6d., 12s. 6d., Val. Torta, Sagittaria Natans, 6s. per dozen. Cryptocoryne Cordata 1s. 6d. to 2s. 6d.; Willisia 2s. 6d.; Haerelliana 2s. 6d.; seven assorted 10s.; Water Wisteria, Giant Hygrophila 2s. 6d. Post 1s. All Advertised Accessories. C. R. Perry, Professional Aquarist, 615, West Street, Crews.

**SUPERB Veilfin Guppies,** £1 per pair; Blue Acanas, 3s. each; Angels, 2s. each; P. Black Mollies, 3s. each, carriage 3s. 6d. C. R. Perry, Professional Aquarist, 615, West Street, Crews.

**AQUARIA FRAMES.** For quality and accuracy buy direct from the manufacturer. 1 x 1 x 1 steel angle 36 x 15 x 15, 26s., 36 x 12 x 12 24s., 30 x 15 x 15, 23s. 6d., 30 x 15 x 12, 23s., 30 x 12 x 12, 22s. 6d., 24 x 12 x 12, 20s. 6d., also 18 x 10, 13s. 6d., 18 x 12, 15s., from 1 x 1 x 1 in. angle. All milled and welds ground flush. Any size to order. Immediate despatch carriage paid. C.W.O. Money refunded if not satisfactory. For complete list, stands, shades, etc., S.A.E. J. B. Heene, 52, Charter Street, Acclington.

**WHEN IN STOKE** visit Evemy's for tropical fish, plants and accessories. Finest selection for the aquarist in the Potteries. 16, Harshill Road, Stoke-on-Trent. Phone 48358.

**CALLING ALL AQUARISTS.** Call and see our large selection of Tropical and Coldwater fish, Plants in variety. We also stock all accessories at "The Aquarist," 192, Wellingborough Road, Northampton. Phone 34610.

**RUSTPROOFED Aquarium Frames,** including bow and corner type. Ornamental Stands, Glazing Cement and Equipment Manufacturers. Westby's Barton, Ormskirk.

**GLAZED aquaria** in all sizes including 36 x 15 x 12, 75s. 6d.; 18 x 10 x 10, 19s. 6d.; 24 x 12 x 12, 42s. 6d., tanks despatched to any part of Britain, carriage extra. Plants, Accessories, Fish. Wright's, 10, Lorne Road, London, N.4. Phone Archway 3820.

**HEMEL HEMPSTEAD, HERTS.** Tropical fish: 40 tanks of over 100 varieties, all equipment, plants, etc. Please pay us a visit and see a first-class display. F. Henison, 7, Bank Court, Hemel Hempstead, Herts. Telephone Boxmoor 5874.

**TROPICAL FISH** in variety. By rail anywhere. S.A.E. for list. Naylor, 44, Darley Dean Road, Selly Oak, Birmingham.

**TROPICAL FISH,** fully quarantined, over 100 species offered at lowest prices. All aquarist requirements supplied. Personal shoppers only. Sterling Fisheries, 62, Mayes Road, Wood Green, N.22.

**LICHESTER.** 50 tanks of fish fully quarantined. Disease free tanks, stands and all the best apparatus/equipment. I specialise in your hobby. It costs nothing to look around at The Boot Aquaria, 198, Belgrave Gate, Leicester. 27788.

**WHITEWORMS—Gregarious culture** and instructions—2s. Eric Baker, 32, Cleveland Road, Brighton.

**PLYMOUTH TROPICALS** for fish, plants and equipment. 127, North Road, Plymouth. Tel. 62663.

**HORSTMANN TIME SWITCHES,** reconditioned, 14 day clock, once on once off every 24 hrs. Jewelled movements, fully guaranteed. 8 amp., 12s. 6d.; 21 amp., 25s. 1 p. & p. 2s. 6d. A. R. Batchelor (A. P. Dept.), 4, Park Road, Bromley, Kent.

**SUPER PET STORES,** 116, Victoria Street, Blackburn, 55049. Good selection tropical fish, plants, accessories. Special offers every week. S.A.E. list.

**GUARANTEED QUALITY PLANTS.** Ambulia, Hygrophila Bacopa, Ludwigia, Vallisneria spiralis, toria, Sagittaria, Myriophyllum, Dwarf Sagittaria, Dwarf Amazon 8d., 7s. 6d. dozen. Riccia Cabomba, Indian Fern, Beckford, 1s. 6d. each. Aponogon Undulatum, Giant Hygrophila, Wisteria, Hartelliana 2s. each. Amazon Sword 3s. 6d. Post 9d. all orders. Over 120 varieties tropical fish. Personal shoppers only. Kingfisheries, 138, Croydon Road, Beckenham, Kent. HEC 3716. Closed Wednesdays.

**GUARANTEED thermostat, heater and thermometer,** 20s. post paid. Suez heater wattage. Sterling Fisheries, 62, Mayes Road, N.22.

**AQUARIA, Appliances, Plants, Marine & Tropical fish,** over 50 tanks. Wessax Aquaria, Beehive Road, Salford, Berks. Telephone BRACKNELL 670.

**AQUARIUM STANDS** to take two tanks 18 1/2 x 12 x 36 ins. high, 12s.; 24 1/2 x 12 x 36 ins. high, 36s.; 30 1/2 x 12 x 36 ins. high, 46s.; 36 1/2 x 12 x 36 ins. high, 46s.; 48 1/2 x 12 x 36 ins. high, 60s. Wrought iron stands, shades rustproofed, frames any size. Send for list S.A.E. Hockney Engineers, 30-32, Somers Street, Leeds, 1. Telephone 25061.

**BARNESLEY, YORKS.**—Wide selection of Tropical Fish. All tanks and accessories. "Pet Stores," 208, Barnesley Road, Cadworth.

**FOR SALE**—Large Stand holds 12 tanks. Wiring control unit, meter, thermal insulation. Suitable fish house. Easily transportable. £15 o.n.o. Lightbody, 9, Montreat Park, East Kilbride, Lanarkshire.

**FOR A GOOD BETTA BIST,** feed McLynn's fish food.

**D. J. TAYLOR,** Newmarket Bird Farm, Claycross, Chesterfield, Derbyshire. Offers the following—Over 1,000 Seedlings, consisting of Nuns, Silverbills, Spicebills, Warblers, Weavers, Buntings, etc. Over 600 Badgies all colours. Over 300 Canaries all breeds. Over 100 Softbills, consisting of Bullfinch, Robins, Thrushes, Jays, Magpies, Kingbirds, Titmice, Hensbills, Hoopoes, Orioles, Woodpeckers, etc. Over 40 Birds of Prey, consisting of Hawks, Falcons, Kites, Buzzards, Eagles, Owls, Owlets. Over 50 Ornamental Birds, consisting of Ducks, Doves, Quail, Jacanas, Pigeons, Lilytrotters, etc. Over 200 animals, consisting of Rats, Squirrels, Monkeys, Marmosets, Mongooses, Civets, Lemings, etc. Over 600 Reptiles, consisting of Toads, Frogs, Lizards, Tortles, Snakes, etc. S.A.E. for complete price list and credit terms.

**THERE** was a young lady from Ryde, Who complained that her fish always died, Then she changed to McLynn's Now she breeds Harlequins And shows off her neophies with pride.

**SHOAL SHOAL SHOAL SHOAL SHOAL SHOAL** fish food for better colour. SHOAL fish food for vigorous health.

**SHOAL** will keep all your fishes in fine colour, vigorous health and breeding fitness.

**SHOAL** has a comprehensive blanket supplement of vitamins and minerals which make it a complete food.

Other foods may look like SHOAL. They only look like it. SHOAL was developed in collaboration with professional fish breeders, a Water Board Fisheries Officer, a Chemist, a Veterinary Surgeon and an expert on Vitamins and Animal Nutrition.

For testing Shoal, no other food of any sort has been fed to our fishes for over four months, during which time we have bred and reared Angels, Tigers, Fighters, Shubertis, X-Rays, Beaccons and many others. SHOAL at only 2s. and 4s. 6d. is attractively packed in useful white opaque cisterns which prevent the loss of Vitamins through the action of light.

Every day more and more enterprising Aquarists are changing to SHOAL.

Every day more and more enterprising dealers are stocking SHOAL. SHOAL is used, recommended and sold by Keith Barracough of Bradford.

SHOAL is used, recommended and sold by Queensborough Fisheries of Shepherd's Bush.

SHOAL is used, recommended and sold by Fairbairns Aquaria of Epsom.

SHOAL is used, recommended and sold by Gamages of Holborn.

SHOAL is used, recommended and sold by Owen Reid of Ealing.

SHOAL is used, recommended and sold by Reid, Hunt & Co. Ltd., of Finchley.

SHOAL is used, recommended and sold by Stirling Fisheries, Hammersmith.

SHOAL is used, recommended and sold by Central Aquaria, Hendon.

SHOAL is used, recommended and sold by Station Aquaria, Ilford.

SHOAL is distributed to the trade by: Kathleen's Fisheries (Tropical) Ltd., 62, Lamba Conduit Street, London, W.C.1 (Hol. 3002). Stuart Hirskins, Lonells Road, Birmingham. Barry M. Austin, 65, Crown Road, Twickenham, Middx. (Pop. 7425). W. Howard, "Birdsacre," Lower Woodhouse, Almondsbury, Nr. Bristol. Trade enquiries welcomed by Shoal Fish Foods, 12, Cranleigh Gardens, Bridgwater, Somerset.

**EASTBOURN.** Finest selection of Tropicals on south coast. Plants, Equipment, Live Foods. Fin & Feather, 14, Oaklyng Road, Eastbourne.

continued on page xi

## The CONSTAT 25/-

Thermostat Type Q.K. Outside Fitting  
ASK TO SEE IT AT YOUR LOCAL DEALER

THE NEW 3-D AQUARIUM BACKGROUNDS for Aquariums 18" x 10" 15/- 24" x 12" 21/- 24" x 15" 25/-

Distributed by  
**BARRY M. AUSTIN**

95, Crown Road, Twickenham, Middx.  
WHOLESALE TO THE AQUATIC TRADE



PREPAID ADVERTISEMENTS—continued from page xi

**FOR SALE**

FANCY Goldfish fancy McLynn's fish food.

**WANTED**

BREEDER will pay top prices for show standard tropical fish of any species. Box 5610, *The Aquarist*, The Butts, Brentford, Middx.

**PLAQUES, SHIELDS, ETC.**

R. HOLTOM & SON, 309, Oldbury Road, Smethwick, 40. Plaques, Shields, Medals, Cups and Medallions for Aquarist and Bird Societies. Tropical and Coldwater fish centres in full colour. Write for details to above.

**APPOINTMENTS VACANT**

STAFF required in London and Bucks., for aquarist's business. School-leavers or older. Live in or out. Experience not necessary. Apply Box 4001, *The Aquarist*, The Butts, Brentford, Middx.

**REPAIRS**

GUARANTEED HEATER REBUILDS, 5s. 6d. each. Send old heaters and state wattages required. New heaters, year's guarantee, 8s. 6d. All by return. J Weir, 7, The Drive, Welwyn

**HOLIDAY ACCOMMODATION**

AQUARIST offers comfortable holiday accommodation in small Guest House. H. & C. and spring interior mattresses all rooms. Packing space. "Watermeat," 6, Hurst Road, Eastbourne. Phone 2325.

**SOUTH WEST LONDON**

**PETFISH**

554 GARRATT LANE, LONDON, S.W. 17  
(Near EARLSFIELD STATION, SR)

**FISH, PLANTS, ACCESSORIES**

CLOSED ON WEDNESDAYS Phone LAKESIDE 2805

**REPTILES — AMPHIBIANS**

*Imports from all Continents*

*Write for current price list*

*Sole agency for England:*

**MR. ALAN COOK**

"White Ladies,"

41, Chestnut Avenue, Andover, Hampshire

DRS. W. DE ROVER

Le puits du Plan Ouest  
Fayence (Var), France

R. B. & J. M. ILES LTD, 6 ADAM ST., LONDON, W.C.2.



**FANTASY FISH FOOD**

Standard: 1/- 2/- 5/- 9/-

Fine grade: 5/-

Coarse grade: 5/-

**FANTASY FRY FOOD**

4/- per pack

**SILVER FANTASY**

4/- per pack

*Fantasy*

COMPLETE DIETS FOR FISH.

# TACHBROOK TROPICALS

244 VAUXHALL BRIDGE ROAD, LONDON, S.W.1

Telephone: VICTORIA 5179

# POST!!!

ALL PARTS OF THE U.K.

ALL PARTS OF THE WORLD

WE OFFER YOU A POSTAL SERVICE SECOND TO NONE—PROMPT AND EFFICIENT—ALL ORDERS ARE ATTENDED TO ON THE SAME DAY AS RECEIVED. IMMEDIATE NOTIFICATION GIVEN IF ANY DELAY IN DELIVERY

## SEEING IS BELIEVING . . .

COME ALONG AND SEE OUR DISPLAY

OF TROPICAL FISH. 7,000—9,000

FISH ALWAYS IN STOCK

### DO YOU KNOW?

WE KEEP ALL THE LATEST EDITIONS OF AQUATIC BOOKS

HARD COVER AQUATIC BOOKS		SOFT COVER BOOKS	
Illustrated Dictionary of Tropical Fishes (Frey) . . . . .	65 0	Tropical Fish (T.F.H. Publ.) . . . . .	15 0
Encyclopedia of Tropical Fish (Axelrod) . . . . .	63 0	Electricity in the Aquarium (Warburton) . . . . .	7 6
Exotic Aquarium Fishes (Innes) . . . . .	84 0	A Manual of Aquatic Plants (Roe) . . . . .	17 6
Diseases of Fishes (Dustin) . . . . .	14 6	Starting Right with Tropical Fish (Gannon) . . . . .	6 0
Tropical Fish as a Hobby (Axelrod) . . . . .	25 0	Starting Right with Goldfish (Gannon) . . . . .	6 0
How to keep and breed Tropical Fish (Dr. Emmers) . . . . .	39 0	All About Breeding Tropical Fish (Schneider) . . . . .	6 0
Saltwater Aquarium Fishes (Axelrod) . . . . .	63 0	All About Guppies (Axelrod & Whitern) . . . . .	6 0
Complete Guide to Tropical Fishes (Schneider) . . . . .	70 0	Garden Pools (Paul Staxon) . . . . .	6 0
All About Tropical Fish (Pflüger) . . . . .	75 0	Diseases (Rolf Gaiser) . . . . .	6 0
Color Guide to Tropical Fish (Axelrod) . . . . .	45 0	How to Keep and Breed Tropical Fish (Dr. Emmers) . . . . .	32 6
Fishes in Colour (Gwynne Vevors) . . . . .	12 0	All About Aquariums . . . . .	12 0
Exotic Tropical Fishes (Loose Leaf) . . . . .	150 0	The Educational Aquarium . . . . .	9 0
Exotic Tropical Fishes (Bound Cover) . . . . .	150 0	Your Terrarium . . . . .	6 0
Freshwater Fishes of the World . . . . .	84 0	Playful Turtles . . . . .	3 0
A Manual of Aquatic Plants (Roe) . . . . .	27 6		
Tropical Fish in Your Home . . . . .	25 0		
Tropical Aquaria for Beginners . . . . .	12 6		
Under the Sea (Burton) . . . . .	25 0		
The Junior Tropical Fish Book . . . . .	9 6		
		<b>T.F.H. PUBLICATIONS 3/- EACH</b>	
		Platies and Moons	Colourful Livebearers
		Tropical Fish Guide	Aquarium Water Chemistry
		Beautiful Bettas	Colourful Egglayers
		Tiny Tetras	Tropical Fish Primer for
		Beautiful Goldfish	Beginners

## ILLUSTRATED CATALOGUE

This catalogue is a new and complete price list of all aquaria requisites including covers, stands, heaters, thermostats, thermometers, air pumps, ornaments, books, cleaning equipment and all other accessories. Available by return of post. Send 6d. to cover postage, etc.

# Shirley Aquatics Ltd.

WATER PLANT NURSERIES AND FISH HATCHERIES—Phone: SHIRLEY 1300

Stratford Road, Monkspath, Shirley, Solihull, Warwickshire

## SPECIAL FEBRUARY OFFERS OF TROPICAL PLANTS

**CRYPTOCORYNE GRIFFITHI**  
7/6 each — 3 for £1  
STRONG ROOTED PLANTS

**LARGE BROAD-LEAFED  
AMAZON SWORDS** 30/- each  
(*ECHINODORUS RANGERI*)

**BEAUTIFUL MATURE JUNIOR SWORDS**  
10/- each  
(*ECHINODORUS BREVIPEDICELLATUS*)

**AMAZON HEART PLANTS**  
(*ECH. TUNICATUS*)  
10/- each

**ECHINODORUS GRANDIFLORUS**  
2"-3" SEEDLINGS 7/6 each

**MIXED HYBRID APONOGETONS**  
(GOOD BUSHY 3"-5" PLANTS)  
2/6 each — 5 for 10/- — 12 for 20/-

**CRYPTOCORYNE SPIRALIS**  
20/- each

## INTERESTING AND UNUSUAL TROPICALS AVAILABLE JAN/FEB

**RED-NOSE TETRAS** 10/- each  
**CARDINAL TETRAS (LARGE)** 7/6 each  
**ROSY TETRAS (LARGE)** 7/6 each

**WELL-GROWN BLACK NEONS**  
7/6 each — 3 for 20/-

**RED-TAILED BLACK SHARKS**  
5/-, 7/6 and 10/- each

**HEMIODUS SEMITAENIATUS**  
10/- each

**SPECIAL:-** YOUNG PAIRS OF  
BLACK-BODIED RED  
VEILTAIL GUPPIES £5 pair

An assortment of **CORYDORAS CATS**  
JULII, PUNCTATUS, ELEGANS, AENEUS, ETC.

Variety of **APHYOSEMEON**  
& **CYNOLEBIAS SPECIES**

**37" & 48" RUST-PROOF BOW FRONT AQUARIUMS**  
(for callers only)

*The most acceptable present for any Aquarium-Keeper . . .*

## A MANUAL OF AQUARIUM PLANTS

110 pages crammed with invaluable information and extravagantly illustrated. Notes on cultivation on most species. No serious aquarium keeper can afford to be without this book.

### PRICES IN GREAT BRITAIN

Limp cover edition printed on Diamond Star paper 17/6 post paid  
Hard cover edition printed on heavy art paper 27/6 post paid

Price-Lists of Aquarium Plants — Send S.A.E. for copy

**PLEASE NOTE**—All enquiries requiring a reply **MUST** be accompanied by S.A.E. Our premises are situated on the main Stratford-Birmingham road, 8 miles from Birmingham, Midland "Red" Bus No. 150 from Bus Station, Birmingham, passes the door, alight at "The Crown," Monkspath.

**HOURS OF BUSINESS**—

Weekdays 10 a.m.—6 p.m. Summer, 10 a.m.—5 p.m. Winter. Sundays 10 a.m.—12.30 p.m. (Also Sunday Afternoons May-July Only)

**CLOSED ALL DAY EVERY MONDAY**

**TERMS OF BUSINESS**—Cash with order please. Fish sent by rail. Tropical minimum order £7-10s., insulated container and carriage 10/-. Cold water minimum order £5 plus 10/- can and carriage. Plants by post (minimum order 10/-) please add 1/6 post and packing.

Printed and Published by BUCKLEY PRESS LIMITED, London and Brentford